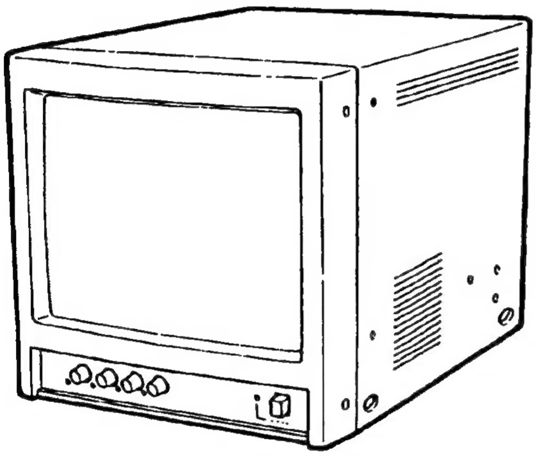
JVC

SERVICE MANUAL

COLOR VIDEO MONITOR

BASIC CHASSIS
A10

TM-A9UCV



CONTENTS

CONTENTS

Item	Content	Item	Content
Colour system Picture tube Screen size (W × H) Scanning frequency Horizontal resolution	NTSC 9" measured diagonally, 90° deflection, in-line gun, vertical stripe phosphor pitch 0.5mm 6-13/16" × 5-3/8" (173 × 136mm) (H) 15.734kHz (V) 59.94Hz 280 TV lines or more	Video input	1 line BNC × 2 (with 1 bridge connected output), 1Vp-p, 75Ω, negative sync, bridge connection possible (termination switch provided)
High Voltage	22kV±1kV (at zero been current)	Power requirements Power consumption	120V AC, 60Hz 0.63A (max)
Operation temperature Relative humidity	0-40℃ (32-104° F) 20-80%	Dimensions (W × H × D) Mass	8-3/4" × 9" × 12-1/2" (222mm × 227mm × 317mm) 15.2 lbs (6.9kg)

Design & specification are subject to change without notice.

No. 51357
Dec. 1997

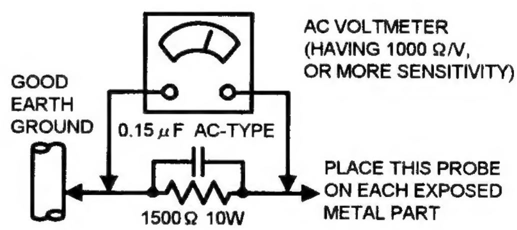
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⊕) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).

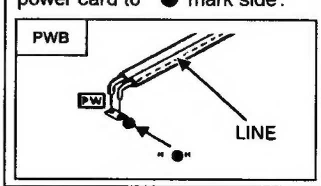


11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item **"How to check the high voltage hold down circuit"**.

This mark shows a fast operating fuse, the letters indicated below show the rating.



POWER CORD REPLACEMENT WARNING.
Connecting the line side of power card to " ●"mark side.



OPERATING INSTRUCTIONS

TM-A9U/TM-A9UCV COLOR VIDEO MONITOR

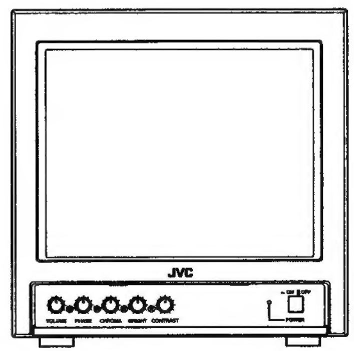
JVC®

COLOR VIDEO MONITOR

TM-A9U
TM-A9UCV

INSTRUCTIONS

No.51357



(TM-A9U shown.)

For Customer Use:
Enter below the Model No. and Serial No. which are located on the rear of the cabinet. Retain this information for future reference.

Model No. ______________

Serial No. ______________

JVC PROFESSIONAL PRODUCTS COMPANY
DIVISION OF US JVC CORP.
41 Slater Drive, Elmwood Park, N.J. 07407
JVC CANADA INC.
21 Finchdene Square, Scarborough Ontario M1X 1A7

Printed in Japan
LCT0149-001A
1297-Tu-U-VP

Thank you for purchasing this JVC color video monitor. Before using it, read and follow all instructions carefully to take fullest advantage of the monitor's performance.

SAFETY PRECAUTIONS

WARNING:
TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:
To reduce the risk of electric shock, do not remove cover. Refer sevicing to qualified service personnel.

INFORMATION

CAUTION: Changes or modification not approved by JVC could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

■ PRECAUTIONS

- Use only the power source specified on the unit.
- Keep flammable material, water, and metal objects away from the unit — especially the interior of the unit.
- This unit incorporates high voltage circuitry.
  For your own safety and that of your equipment, do not attempt to modify or disassemble this monitor.
  There are no user-serviceable parts inside.
- Unplug the monitor when you're not going to be using it for a long period.

■ HANDLING

- Avoid shocks or vibrations. These may damage the unit and cause it to malfunction.
- Do not block the ventilation slots.
- Do not expose this unit to high temperatures.
  Extended exposure to direct sunlight or a heater could deform the cabinet or cause the performance of internal components to deteriorate.
- Do not place the unit near appliances generating strong electric or magnetic fields. These can generate picture noise and instability.
- Keep the monitor clean by wiping the cabinet and CRT screen with a piece of soft cloth. Do not apply thinner or benzene. These chemicals can damage the finish and erase printed letters. When the unit is excessively dirty, use a diluted neutral cleanser, then wipe away the cleanser with a dry cloth.

SCREEN BURN

- It is not recommended to keep a certain still image displayed on screen for a long time as well a dispalying extremely bright images on screen. This may cause a burning (sticking) phemomenon on the screen of cathode-ray tube.
  This problem does not occur as far as displaying normal video playback motion images.

FEATURES

- ■ 9-inch TV-grade cathode-ray tube
- ■ Horizontal resolution of 280 TV lines or more
- ■ Professional metal cabinet design
- ■ Bridge-connectable input terminals (1 line for video, 1 line for audio *1)

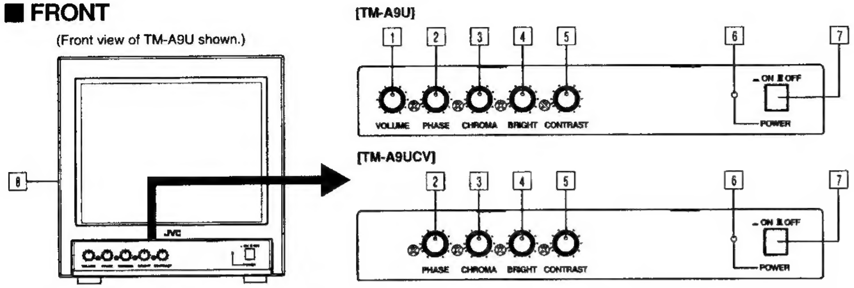
*1: The audio function can only be used with the TM-A9U.
It is not available with the TM-A9UCV.

CONTENTS

CONTROLS AND FEATURES

■ FRONT

(Front view of TM-A9U shown.)



[1] **VOLUME control (TM-A9U only)**
Turn to adjust speaker volume.

[2] **PHASE control**
Turn to adjust picture hue, using natural skin color as a reference.

[3] **CHROMA control**
Turn to adjust picture color density according to your requirements.

[4] **BRIGHT control**
Turn to adjust picture brightness according to your requirements.

[5] **CONTRAST control**
Turn to adjust picture contrast according to your requirements.

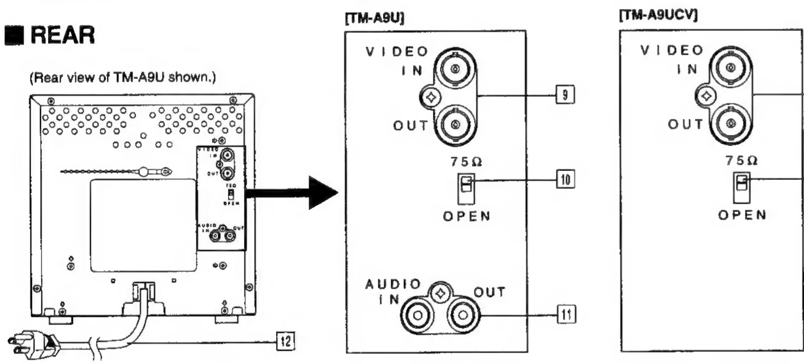
[6] **Power indicator**
Glows to indicate that power is on.

[7] **POWER switch**
Press to turn the power on or off.

[8] **Speaker (TM-A9U only)**
The built-in speaker is located on the side panel.

■ REAR

(Rear view of TM-A9U shown.)



[9] **VIDEO IN (video input), VIDEO OUT (video output) terminals**
These are the input and output (bridge-connected output) terminals (BNC) for the video signal. When a signal is input through the IN terminal, a bridge-connected (looping) output can be obtained from the OUT terminal.

Note:
- Confirm if the termination switch setting matches the VIDEO terminal connection.

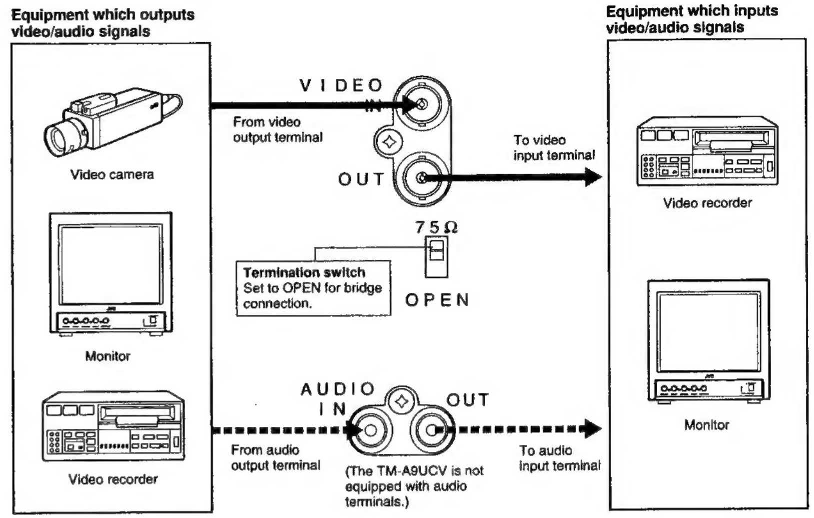
[10] **Termination switch**
Set to OPEN for bridge connection; set to 75Ω for input signal only.

[11] **AUDIO IN (audio input), AUDIO OUT (audio output) terminals (TM-A9U only)**
These are the input and output (bridge-connected output) terminals (RCA) for the audio signal. When a signal is input through the IN terminal, a bridge-connected (looping) output can be obtained from the OUT terminal.

[12] **Power cord**
Connect the power plug to an AC outlet (120 V AC, 60 Hz).

Note:
- The monitor may be equipped with a 3-blade grounding-type plug. If you are unable to insert the plug into the outlet, contact your electrician.

CONNECTION EXAMPLE



Notes:
- The illustration above only shows some possible connection examples, for reference. Terminal types and/or connections may differ according to the component connected. Also refer to the Instruction Manual of the component to be connected.
- Before connecting, be sure to turn off the power of all the components.
- For video signal connection, use only a 75 Ω coaxial cable.
- Input and output terminals for video or audio (The TM-A9UCV is not equipped with audio terminals.) are bridge-connected. Do not apply two input signals to both (input and output) terminals at the same time.
- For a bridge (loop) connection, connect each of input and output terminals on the monitor to separate video components. For example, if both of them are connected to a video recorder, the picture will shake abnormally except when in the recorder's play mode. This phenomenon occurs due to a signal circulating around inside a certain component, and is not a malfunction.

BASIC OPERATION

1. To turn the power on: Push the POWER switch.

The power indicator glows green. To turn off power, push the POWER switch again, and the power indicator goes off.

2. To adjust the audio level: (TM-A9U only)

Turn the VOLUME control to the right to increase the level, or to the left to decrease the level.

Note:
- The audio function can only be used with the TM-A9U.
It is not available with the TM-A9UCV.

PICTURE ADJUSTMENTS

Turn a separate front panel control to adjust picture contrast, picture brightness, picture color density and picture hue respectively:

■ **CONTRAST (picture contrast) control**

Softer CONTRAST **Clearer**

■ **BRIGHT (picture brightness) control**

Darker BRIGHT **Brighter**

■ **CHROMA (picture color density) control**

Thinner CHROMA **Denser**

■ **PHASE (picture hue) control**

Purplish PHASE **Greenish**

TROUBLESHOOTING

Before concluding a problem has occurred, check the following points. If the problem persists after carrying out the checks, disconnect the power cord from the AC outlet and consult the dealer from whom you purchased the monitor.

Note:

- The audio function can only be used with the TM-A9U. It is not available with the TM-A9UCV.

Problems	Points to be checked	Measures
No power supply.	Is the power plug connected to the AC outlet?	Securely connect the power plug to the AC outlet.
No picture or sound.	Is the monitor turned on?	Press the POWER switch to turn the monitor ON (see pages 4 and 5).
	Is an output signal coming in from a source component?	Perform required settings on the output component.
	Is the cable connected improperly?	Connect both the video/audio signal cables securely and properly (see pages 4 and 5).
Normal picture but no sound.	Is audio level set to the minimum?	Adjust the VOLUME control (see pages 4 and 5).
	Is the audio signal cable connected improperly?	Connect the audio signal cable securely and properly (see pages 4 and 5).
Normal sound but no picture.	Is the video signal cable disconnected or connected improperly?	Connect the video signal cable securely and properly (see pages 4 and 5).
No color, wrong color, or dark picture.	Have the picture settings been changed?	Adjust CHROMA, BRIGHT, CONTRAST and/or PHASE controls (see pages 4 and 6).
Shaking picture.	Is there a device generating a strong magnetic field (motor, transformer, etc.) near the monitor?	Move it away from the monitor until the picture becomes stable.
Unnatural, irregularly colored or distorted picture.	Is there a speaker, magnet or any other magnetized object near the monitor?	After moving it away from the monitor, turn the monitor's power off. After 30 minutes or more, turn the power on again.

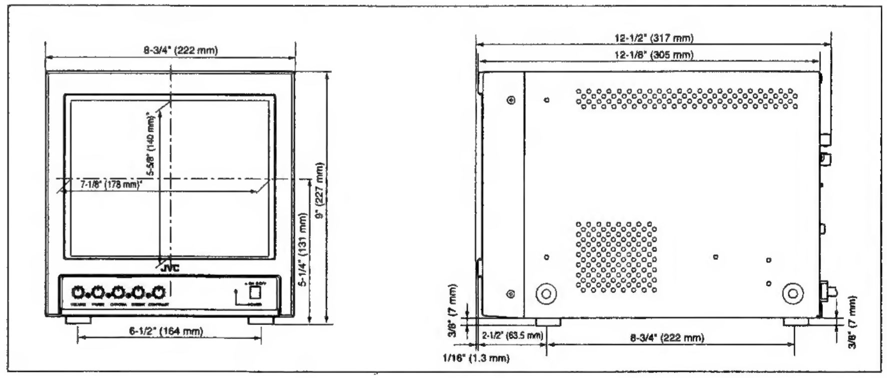
No.51357

SPECIFICATIONS

Type	: Color video monitor
Color system	: NTSC
Picture tube	: 9" measured diagonally, 90° deflection, in-line gun, vertical stripe phosphor pitch 0.5 mm
Screen size (W x H)	: 6-13/16" x 5-3/8" (173 x 136 mm)
Scanning frequency	: (H) 15.734 kHz (V) 59.94 Hz
Horizontal resolution	: 280 TV lines or more
Video input	: 1 line, BNC x 2 (with 1 bridge-connected output), 1.0 V p-p, 75 Ω, negative sync, bridge connection possible (termination switch provided)
Audio input	: TM-A9U only 1 line (monaural), RCA x 2 (with 1 bridge-connected output), 0.5 V rms, high impedance, bridge connection possible
Audio power output (effective)	: TM-A9U only 1 W (monaural)
Built-in speaker	: TM-A9U only 3-3/16" (8 cm) round, 8 Ω x 1
Operation temperature	: 0 – 40 °C (32 – 104 °F)
Relative humidity	: 20 – 80 %
Power requirements	: 120 V AC, 60 Hz
Power consumption	: 0.66 A maximum [TM-A9U] 0.63 A maximum [TM-A9UCV]
Dimensions (W x H x D)	: 8-3/4" x 9" x 12-1/2" (222 x 227 x 317 mm)
Weight	: 15.4 lbs (7.0 kg) [TM-A9U] 15.2 lbs (6.9 kg) [TM-A9UCV]

Dimensions

* The faceplate dimensions shown are larger than the visible portion of the screen (screen size).



(TM-A9U shown.)

E. & O.E. Design and specifications subject to change without notice.

SPECIFIC SERVICE INSTRUCTIONS

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

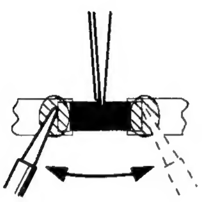
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

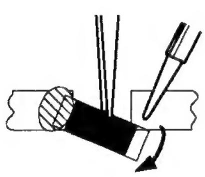
1. How to remove Chip parts

◆ Resistors, capacitors, etc

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

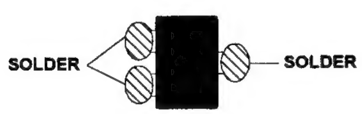


(2) Shift with tweezers and remove the chip part.

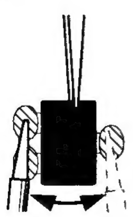


◆ Transistors, diodes, variable resistors, etc

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

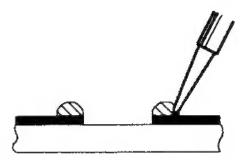


Note : After removing the part, remove remaining solder from the pattern.

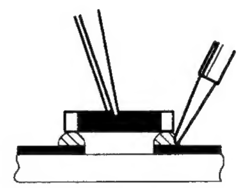
2. How to install Chip parts

◆ Resistors, capacitors, etc

(1) Apply solder to the pattern as indicated in the figure.

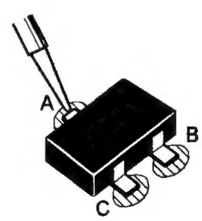


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

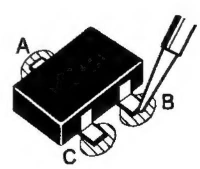


◆ Transistors, diodes, variable resistors, etc

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



DISASSEMBLY PROCEDURE

[Inportant]

Always remove the electrical cord from the well outlet before assrmbly and disassembly because certain parts will still be electrically changed even when the power switch is turned off.

REMOVING THE TOP COVER

1. Remove 4 screws A and 4 screws B.
2. The top cover can be removed by spreading its lower part sightly and raising it while pulling it towards the rear of the unit.

REMOVING THE REAR PANEL

- Afthe removing the top cover.

1. Remove 5 screws C.
2. Pull the upper part slightly to the rear and pull the chassis back to remove it.

REMOVING THE BOTTOM COVER

- After removing the top cover and rear panel, follow the steps given below.

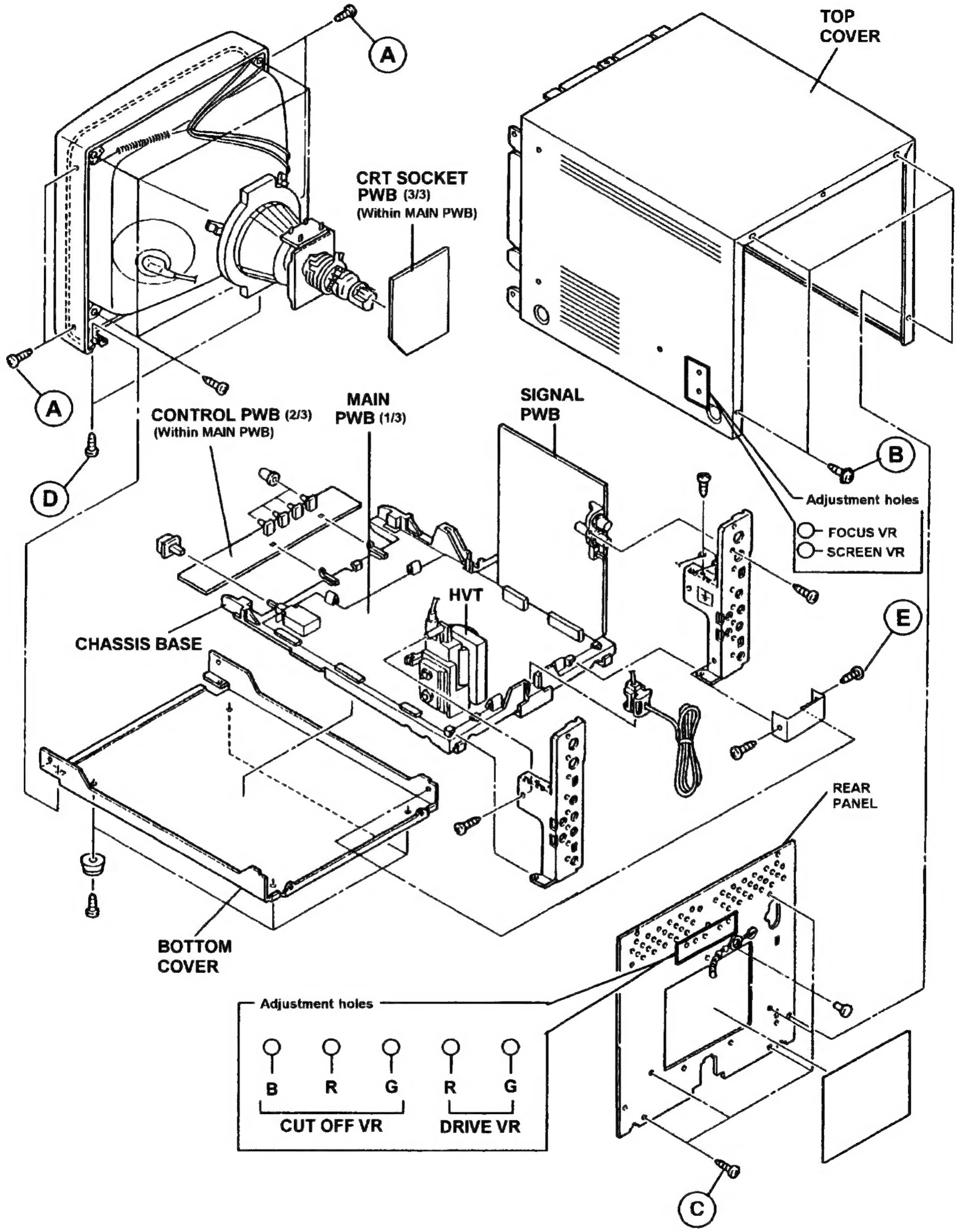
1. Place the front surface downward, then stand the bottom cover while facing it toward you.
   At this time, care must be exercised not to damage the front panel and CRT surface.
2. Loosen the two screws marked D as shown in the figure.
3. Remove the one screw marked E as shown in the figure.
4. After pulling the rear panel side of the bottom cover toward you slightly, keep the chassis base from the bottom cover slightly.
5. When the chassis base has been kept from the bottom cover slightly, pull the bottom cover upward while leaving the situation as it is, then remove the bottom cover.
6. When the bottom cover has been removed, you can check the main PWB and control PWB in such a situation.

[CAUTION]

* When erecting the chassis, be careful so that there will be no contacting with other PW board.
* Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together.
   Should it be inadvertently removed, be sure to tie the wires with a new cable tie.


A
TOP
COVER
CRT SOCKET
PWB (3/3)
(Within MAIN PWB)
A
D
CONTROL PWB (2/3)
(Within MAIN PWB)
MAIN
PWB (1/3)
SIGNAL
PWB
B
Adjustment holes
FOCUS VR
SCREEN VR
HVT
E
CHASSIS BASE
REAR
PANEL
BOTTOM
COVER
Adjustment holes
B
R
G
R
G
CUT OFF VR
DRIVE VR
C

SERVICE ADJUSTMENTS

PRIOR TO STARTING ADJUSTMENT

1. Supply power to the set and measuring instruments and allow to warm up for at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. Use care not to disturb controls and switches not mentioned in the adjustment items.
4. Refer to adjustment settings and set user operated controls (bright, contrast, chroma, etc.) to the indicated positions.

TOOLS AND FIXTURES FOR ADJUSTMENT

- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (NTSC systems)
  - Color bar and split color bar patterns
  - Crosshatch pattern
  - Cross pattern
  - Red raster pattern
  - Green raster pattern
  - Blue raster pattern
- Color analyzer or color temperature meqsurement device.

ADJUSTMENT SETTINGS

1. Front controls

CONTRAST	Center click position
BRIGHT	Center click position
CHROMA	Center click position
PHASE	Center click position

2. Rear switch

TERMINATION SW : 75Ω
(75Ω/OPEN)

3. On PW board switch

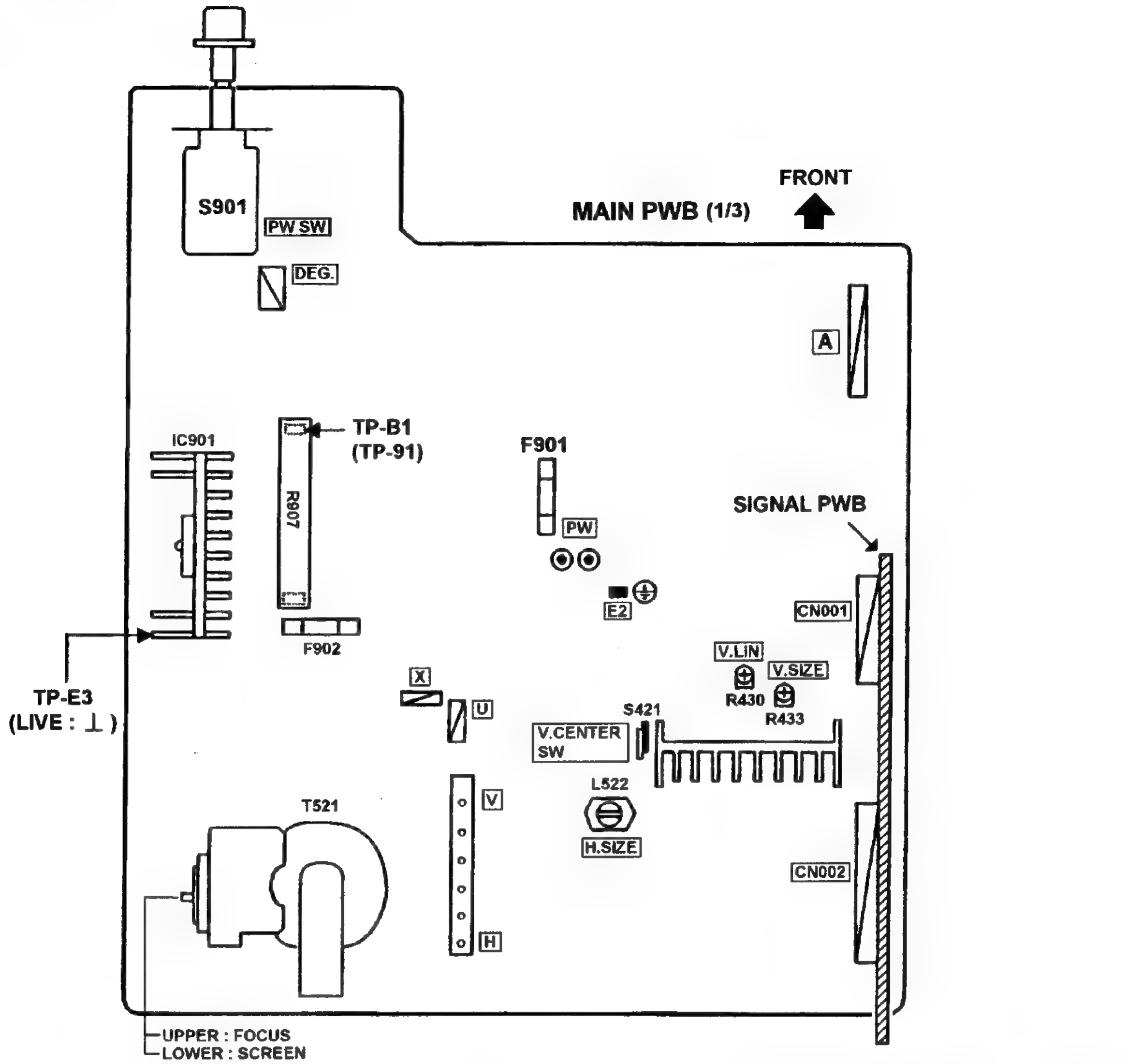
Positioned N side of each SERVICE SW on PW boards.

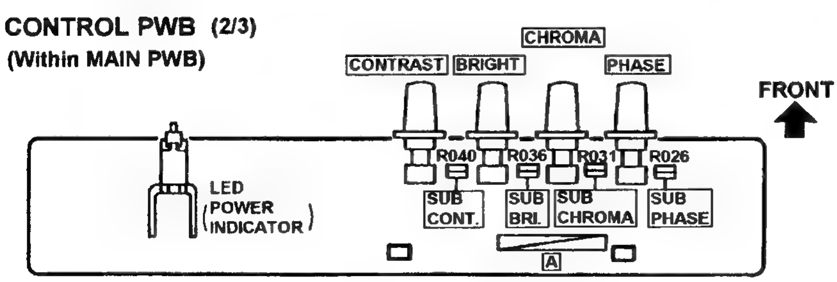
FOCUS, SCREEN, CUT OFF AND DRIVE ADJUSTMENT HOLES

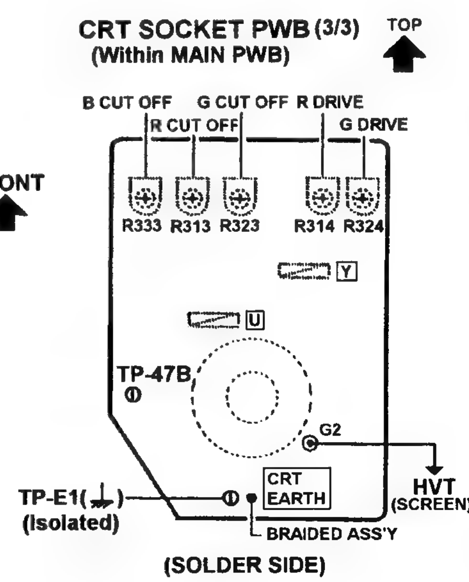
- The Focus and Screen adjustment holes are on the side of the set (see Page 5).
- The Cut off and Drive adjustment holes are on the rear panel of the set (see Page 5).

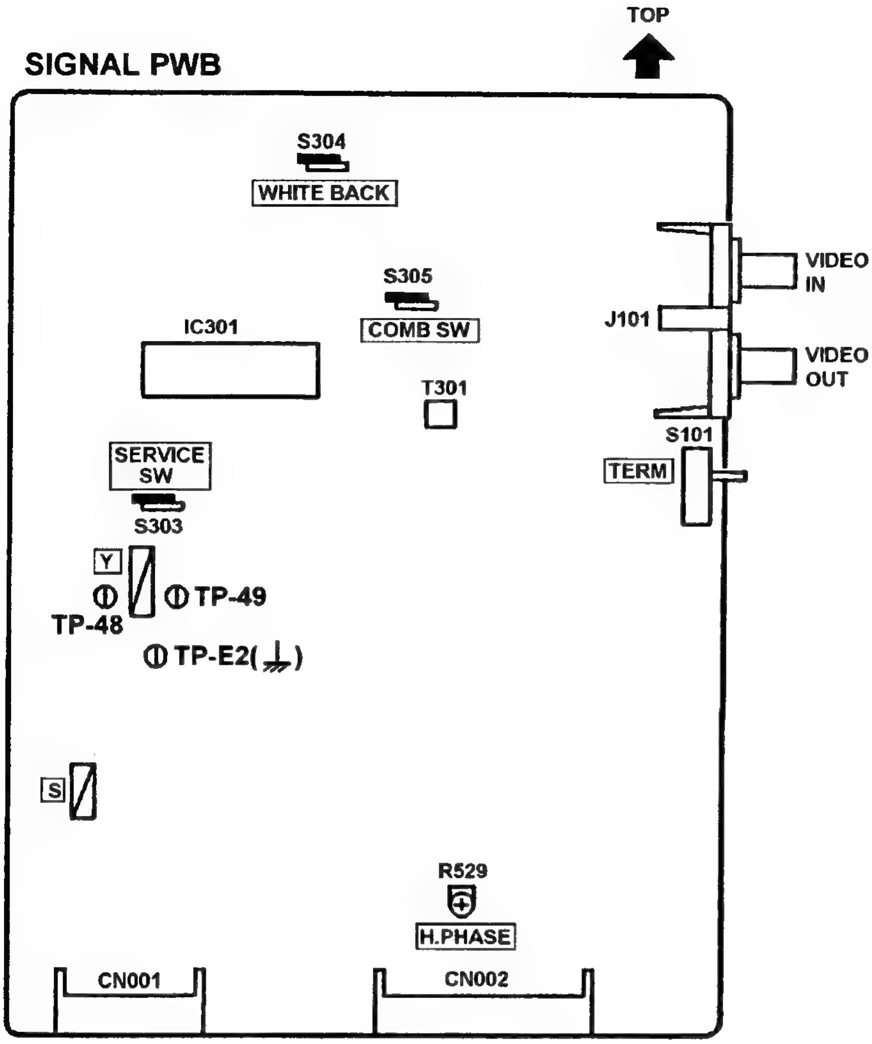
[CAUTION]
Be sure to use a non-metallic driver for adjusting there VRs. A metallic driver can cause damage by shorting.

ADJUSTMENT LOCATIONS

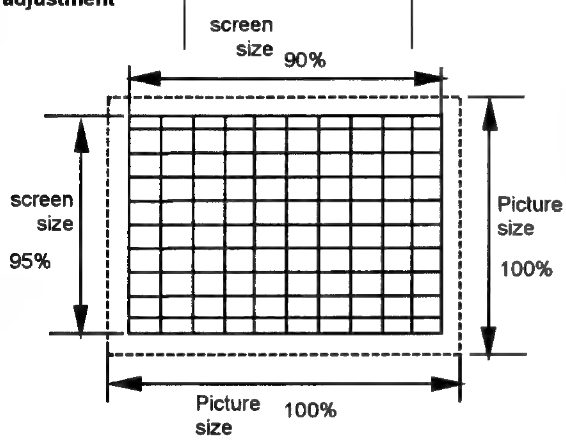




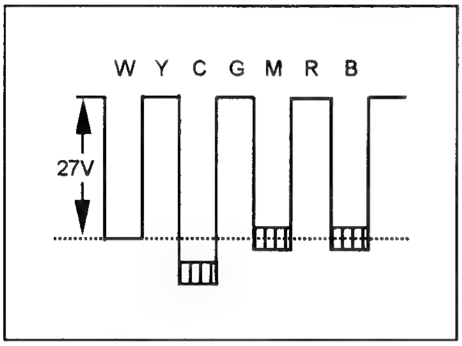


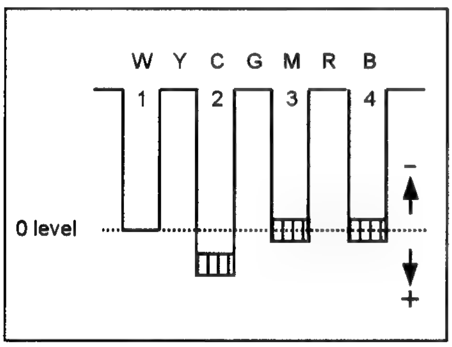

TOP
SIGNAL PWB
S304
WHITE BACK
S305
COMB SW
IC301
J101
VIDEO IN
VIDEO OUT
T301
S101
TERM
SERVICE SW
S303
Y
TP-49
TP-48
TP-E2( )
S
R529
H.PHASE
CN001
CN002

ADJUSTING STEP

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Check of B1 POWER SUPPLY	**Voltmeter** **Signal generator**	**TP-B1(TP-91)** **TP-E3 (⊥)** **(IC901 HEAT. SINK)**		1. Input an all-black signal. 2. Confirm DC 115V ±1V between TP-B1(TP-91) and TP-E3 (⊥).
Focus adjustment	**Signal generator**		**FOCUS VR** **[In HVT]**	1. Input a crosshatch signal. 2. While looking at the screen, adjust FOCUS VR so that the vertical and horizontal lines will be clear and in fine detail. 3. Make sure that the picture is in focus even when the screen gets darkened.
H. Size and H. Center adjustment  **(Fig. A)**	**Signal generator**		**H. SIZE COIL** **(L522)** **[MAIN PWB]** **H. PHASE VR** **(R529)** **[SIGNAL PWB]**	• Perform after completing brightness and contrast adjustments. 1. Input a crosshatch signal. 2. Adjust the H. PHASE VR to center the Picture on the CRT. 3. Adjust the H. SIZE COIL to set the horizontal size to 90% (Fig. A)
V. Size, V. Center and V. Linearity adjustment	**Signal generator**		**V. SIZE VR** **(R433)** **V. CENTER SW** **(S421)** **V. LIN VR** **(R430)** **[MAIN PWB]**	• Perform after completing brightness and contrast adjustments. 1. Input a crosshatch signal. 2. Adjust vertical linearity with the V. LIN VR. 3. Adjust the V. CENTER SWITCH to center the Picture on the CRT. 4. Adjust the V. SIZE VR to set the vertical size to 95% (Fig. A). 5. If necessary, readjust the V. LIN VR.
Brightness adjustment	**Signal generator**		**SUB BRIGHT VR** **(R036)** **[CONTROL PWB]**	• Perform after completing white balance adjustments. 1. Input a split color bar signal. 2. Adjust the SUB BRIGHT VR to eliminate illumination in the 0% black component.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Contrast adjustment	**Signal generator** **Oscilloscope**	**TP-47B** **TP-E1(⏚)** **[CRT SOCKET PWB]**	**SUB CONT. VR(R040)** **[CONTROL PWB]**	1. Input a colour bar signal (set for 0.525V between black and white). 2. Connect an oscilloscope to TP-47B and TP-E1(⏚). 3. Adjust the SUB CONTRAST VR to set the level indicated in the figure to 27V.
Chroma adjustment	**Signal generator** **Oscilloscope**	**TP-47B** **TP-E1(⏚)** **[CRT SOCKET PWB]**	**SUB PHASE VR (R026)** **SUB CHROMA VR (R031)** **[CONTROL PWB]** **COMB SWITH (S305)** **[SIGNAL PWB]**	1. Input a color bar signal. 2. Connect an oscilloscope between TP-47B and TP-E1 (⏚). 3. Set the COMB SWITCH (S305) to S (service) side. 4. Adjust the SUB PHASE VR and arrange the W-M (White and Magenta). 5. Adjust the SUB CHROMA VR and arrenge the W-B (White and Blue). 6. Repeat this procedure altemately with W at the 0 level as shown in the figure until both M and B are at the 0 level. 7. Return the COMB SWITH (S305) to N (normal) side.





Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
White balance (low Light) adjustment	**Signal generator**		**SERVICE SW (S303) [SIGNAL PWB]** **R CUT OFF VR (R313)** **G CUT OFF VR (R323)** **B CUT OFF VR (R333)** **[CRT SOCKET PWB]** **SCREEN VR [In HVT]**	1. Input a monoscope pattern signal. 2. Set the SERVICE SWITCH of the signal PWB to S to produce a signal horizontal line. 3. Turn the RED, GREEN and BLUE CUT OFF VRs fully counter-clockwise. 4. Set the RED and BLUE DRIVE VRs to approximately center positions. 5. Turn the SCREEN VR fully counter-clockwise, then gradually turn it clockwise until a single blue, green or red horizontal line just slightly appears. 6. Turn the CUT OFF VR corresponding to the initial color about 10 degrees clockwise. Again adjust the SCREEN VR to where this color just slightly appears. 7. Adjust the CUT OFF VRs of the other two colors to where the three overlapped colors appear white. 8. Return the SERVICE SWITCH to normal(N). 9. Set for a dark screen and fine adjust the R, G and B CUT OFF VRs to obtain the optimum white color.
White balance (high light) adjustment	**Signal generator** **Colour analyzer**		**R DRIVE VR (R314)** **G DRIVE VR (R324)** **[CRT SOCKET PWB]**	1. Input a monoscope pattern signal. 2. Adjust the RED and GREEN DRIVE VRs to produce an overall white screen. • If a color temperature meter is available : Measure the center of the screen with the sensor of the color temperature meter. Adjust the RED and GREEN DRIVE VRs to obtain D6500°K. 3. Turn the contrast and brightness VRs. Confirm correct white balance tracking from low light to high light.

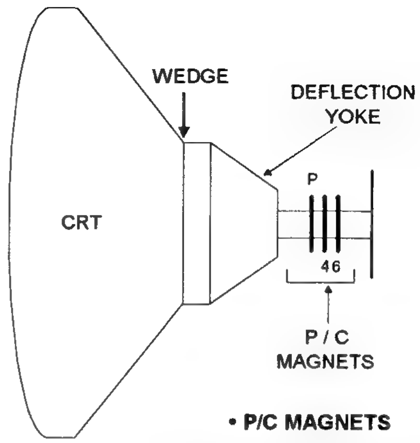
PURITY, CONVERGENCE

PURITY ADJUSTMENT

Befor adjusting :

- Turn the screen VR to where the raster dose not appear.
- Set the white back switch (S304) to S, allow to run for at least 30 minutes, then return the switch to N.
- Set the screen VR to the original position.

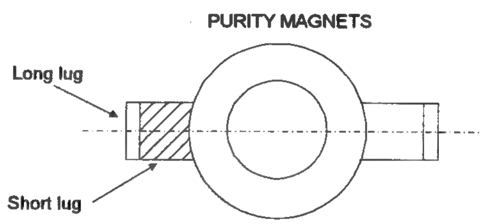
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• **P/C MAGNETS**

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1



Bring the long lug over the short lug and position them horizontally.

Fig.2

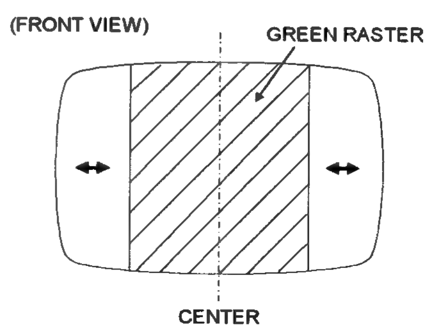


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

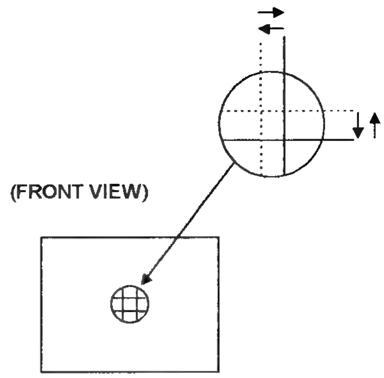


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

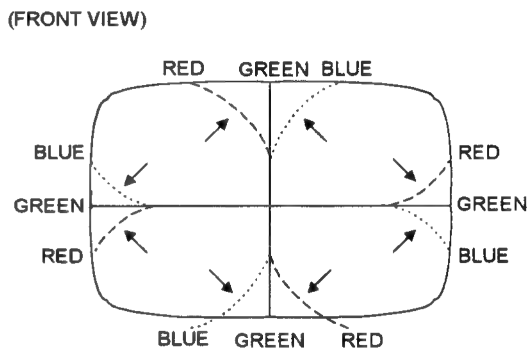


Fig.2

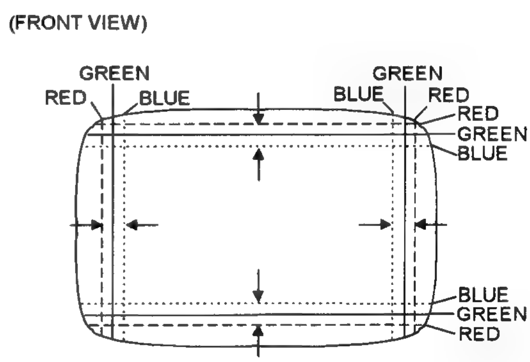


Fig.3

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT

(1) Turn the POWER SW ON.
(2) As shown in Fig.1, set the resistor (between [X] connector [1] & [3]).
(3) Make sure that the screen picture disappears.
(4) Temporarily unplug the power cord.
(5) Remove the resistor (between [X] connector [1] & [3]).
(6) Again plug the power cord, make sure that the normal picture is displayed on the screen.

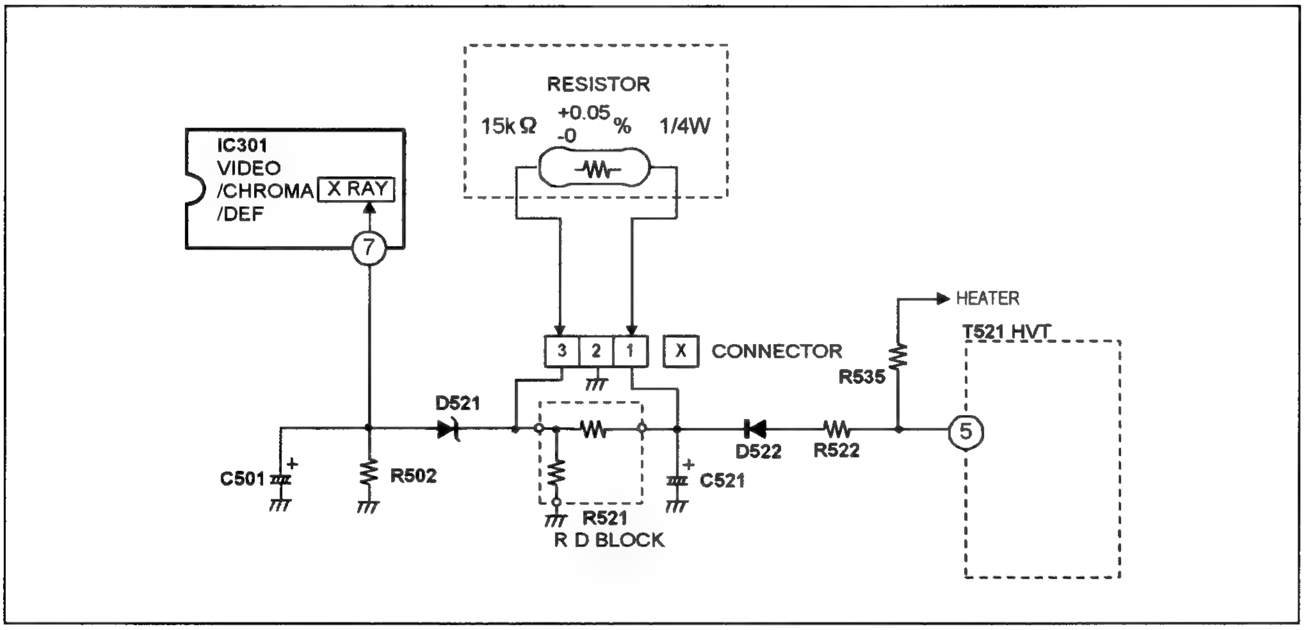


Fig. 1

TM-A9UCV STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal	:Color bar signal
(2)Setting positions of each knob/button and variable resistor	:Original setting position when shipped
(3)Internal resistance of tester	:DC 20kΩ/V
(4)Oscilloscope sweeping time	:H ⇒ 20μS/div
	:V ⇒ 5mS/div
	:Others ⇒ Sweeping time is specified
(5)Voltage values	:All DC voltage values

∗ Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

● In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

● Resistance value

No unit	:[Ω]
K	:[KΩ]
M	:[MΩ]

● Rated allowable power

No indication	:1/6[W]
Others	:As specified

● Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammble resistor
FR	:Fusible resistor

*Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

● Capacitance value

1 or higher	:[pF]
less than 1	:[μF]

● Withstand voltage

No indication	:DC50[V]
Others	:DC withstand voltage [V]

*Electrolytic Capacitors

47/50[Example]:Capacitance value [μF]/withstand voltage[V]

● Type

No indication	:Ceramic capacitor
MY	:Mylar capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

No unit	:[μH]
Others	:As specified

(4)Power Supply

:B1(115V)

:B2(12V)

:9V

:5V

*Respective voltage values are indicated

(5)Test point

:Test point

:Only test point display

(6)Connecting method

:Connector

:Wrapping or soldering

:Receptacle

(7)Ground symbol

⊥ :LIVE side ground

⊥ :ISOLATED(NEUTRAL) side ground

⏚ :EARTH ground

▽ :DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⊥) side GND. Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

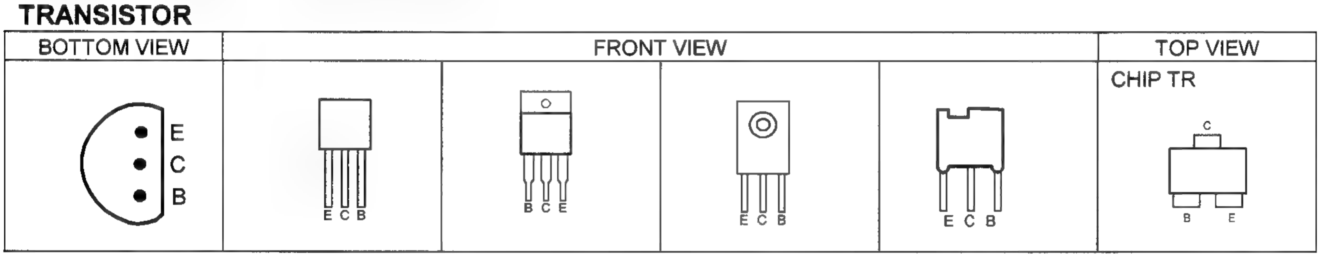
◇ **Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

Dec. 1997 No.51357

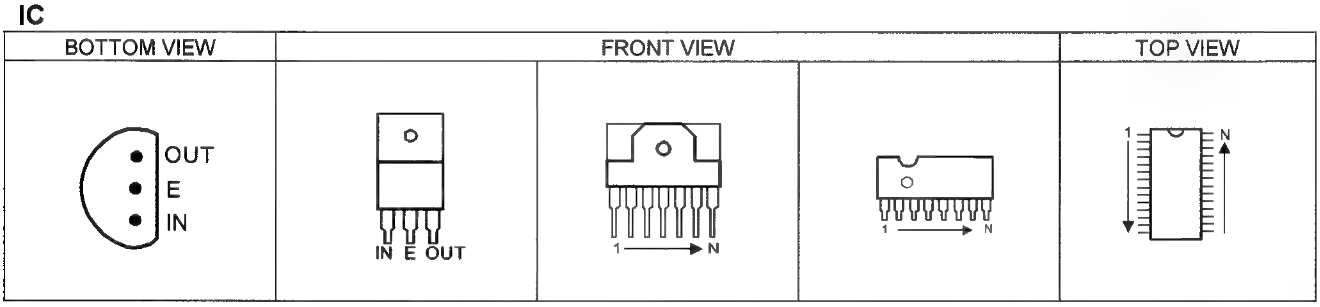
CONTENTS

SEMICONDUCTOR SHAPES

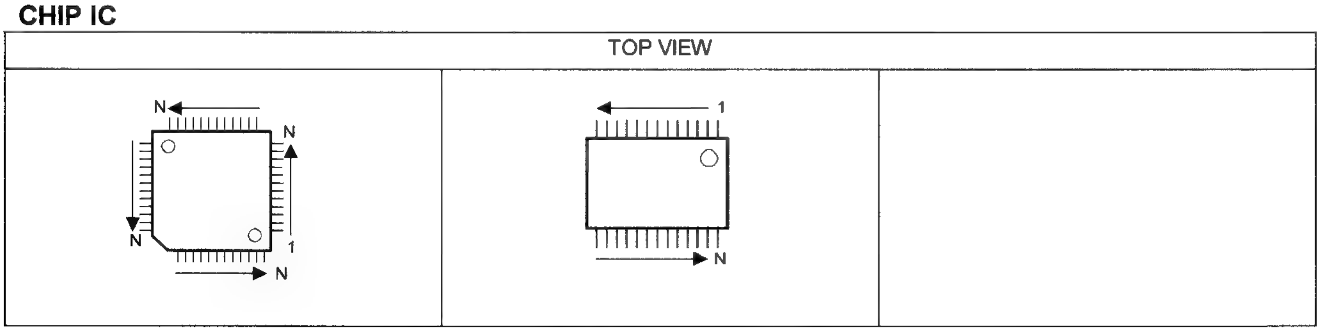
TRANSISTOR



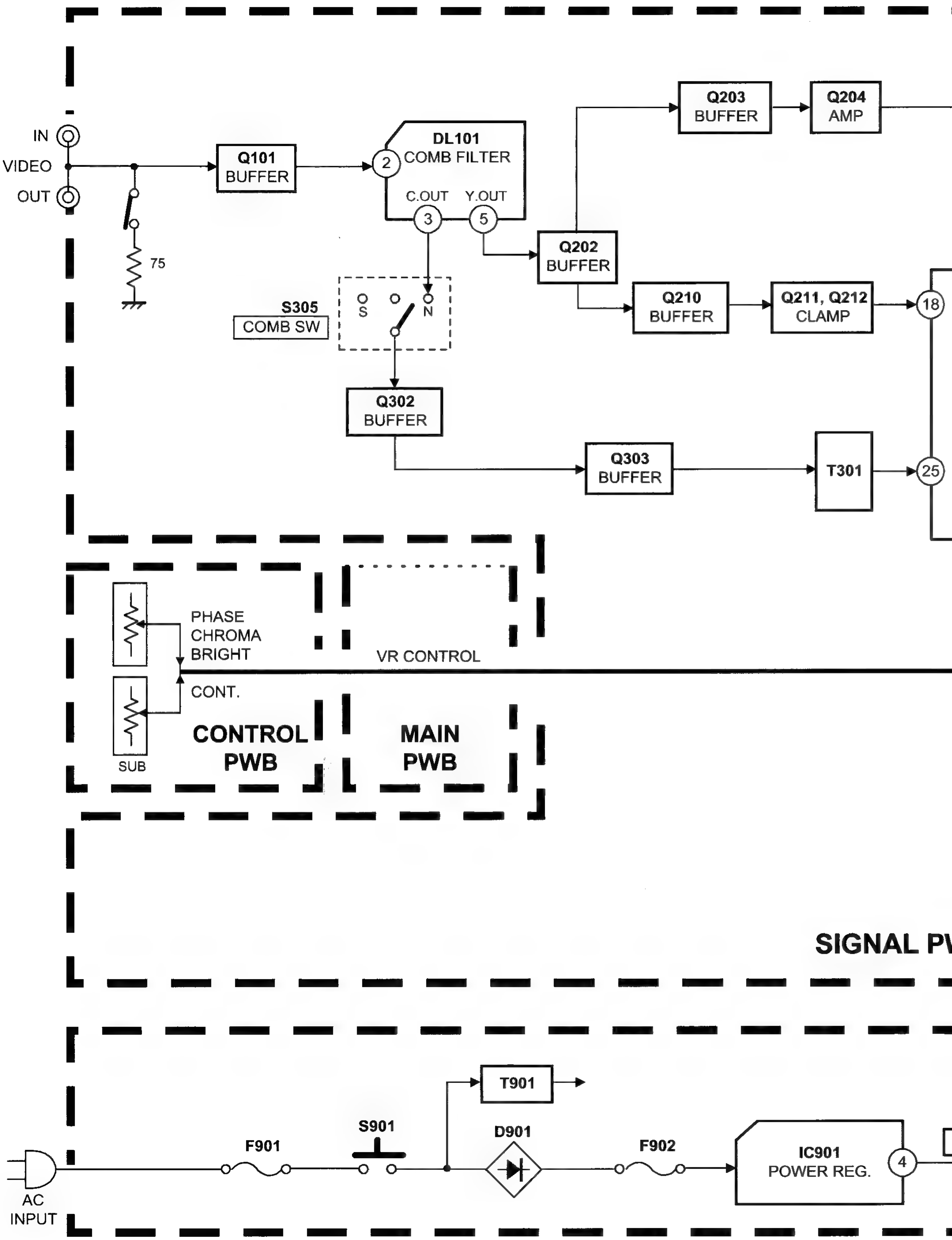
IC

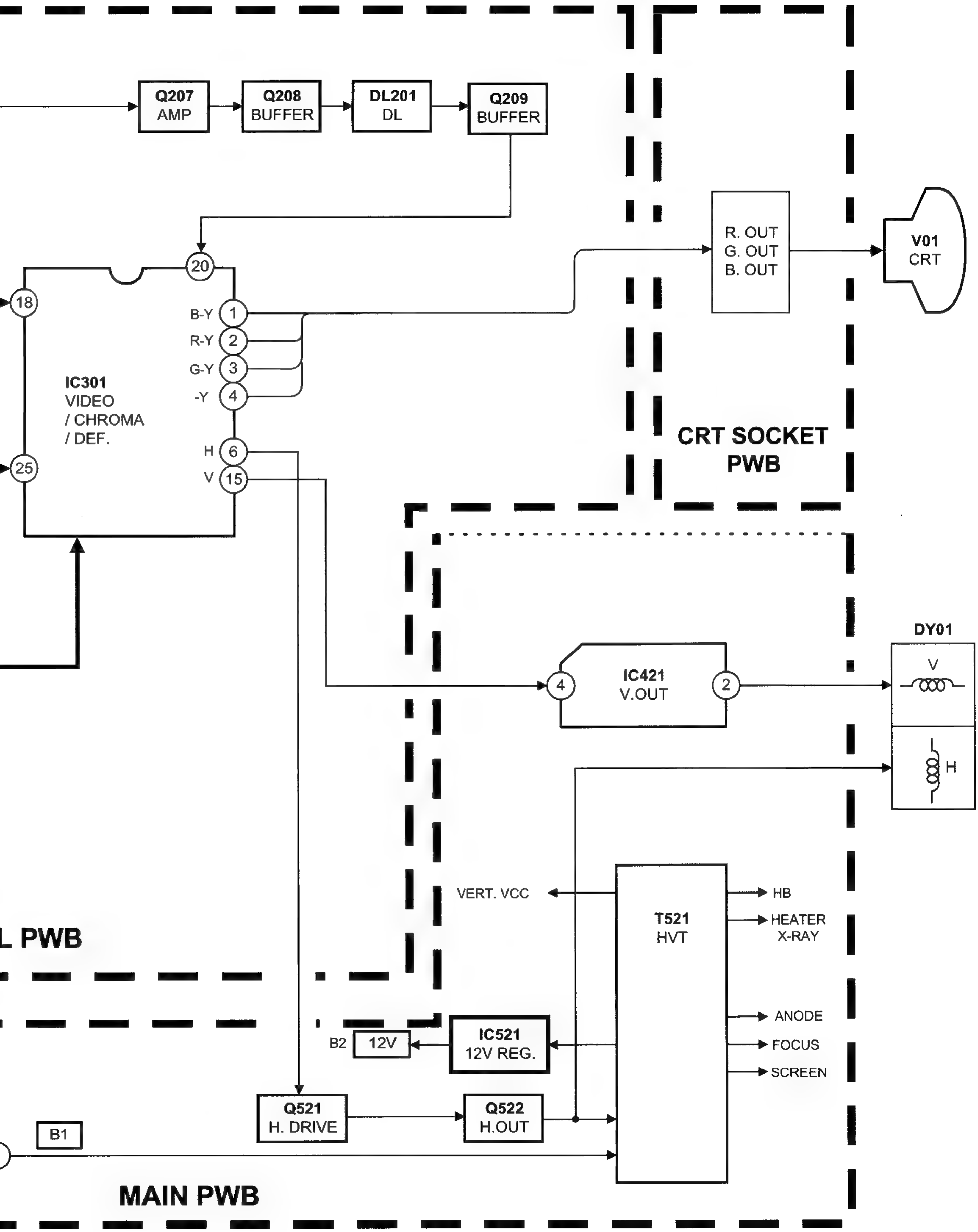


CHIP IC



BLOCK DIAGRAM

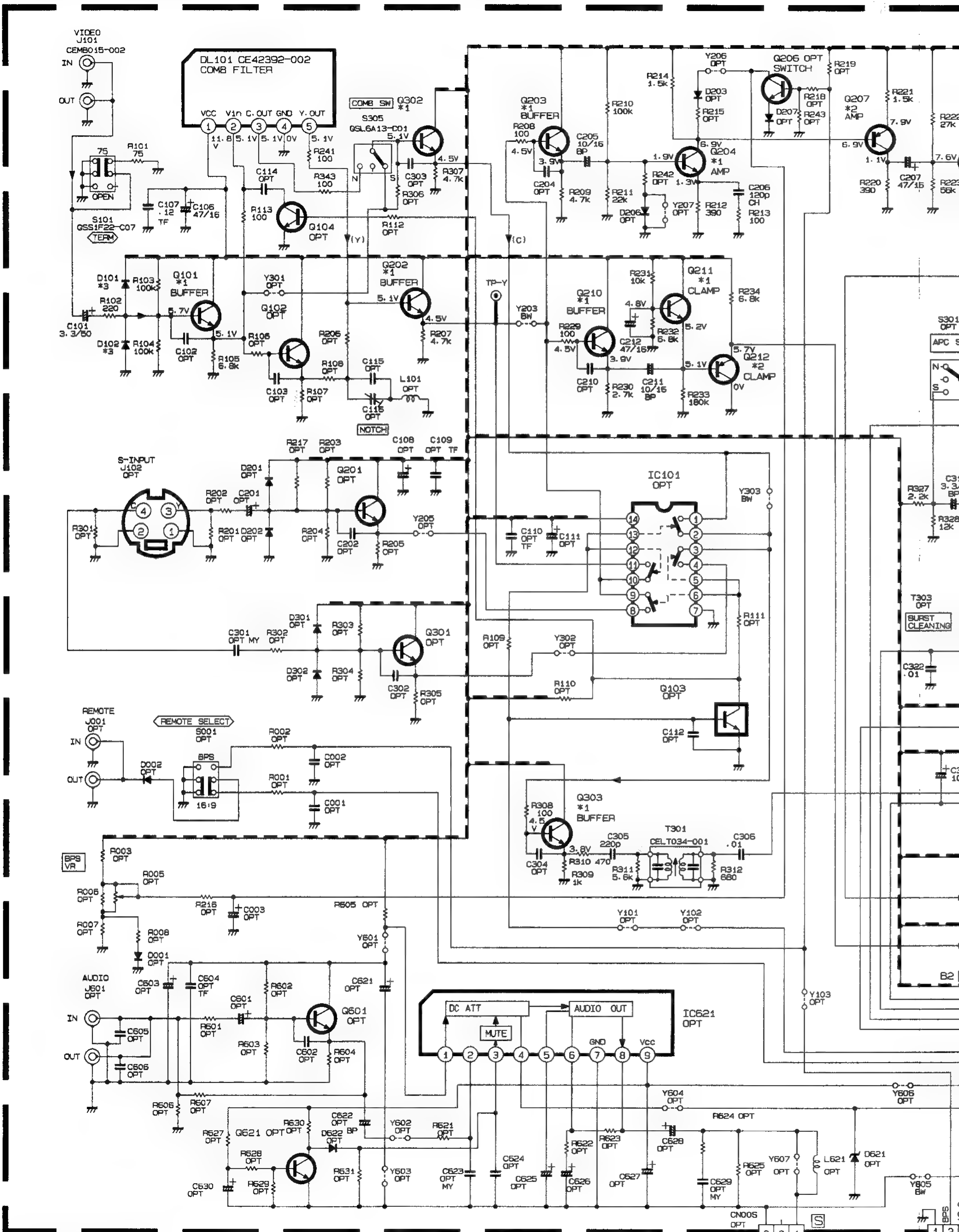




Q207
AMP
Q208
BUFFER
DL201
DL
Q209
BUFFER
20
18
B-Y 1
R-Y 2
G-Y 3
-Y 4
IC301
VIDEO
/ CHROMA
/ DEF.
H 6
V 15
25
R. OUT
G. OUT
B. OUT
V01
CRT
CRT SOCKET
PWB
DY01
V
H
4
IC421
V.OUT
2
VERT. VCC
T521
HVT
HB
HEATER
X-RAY
ANODE
FOCUS
SCREEN
L PWB
B2
12V
IC521
12V REG.
Q521
H. DRIVE
Q522
H.OUT
B1
MAIN PWB

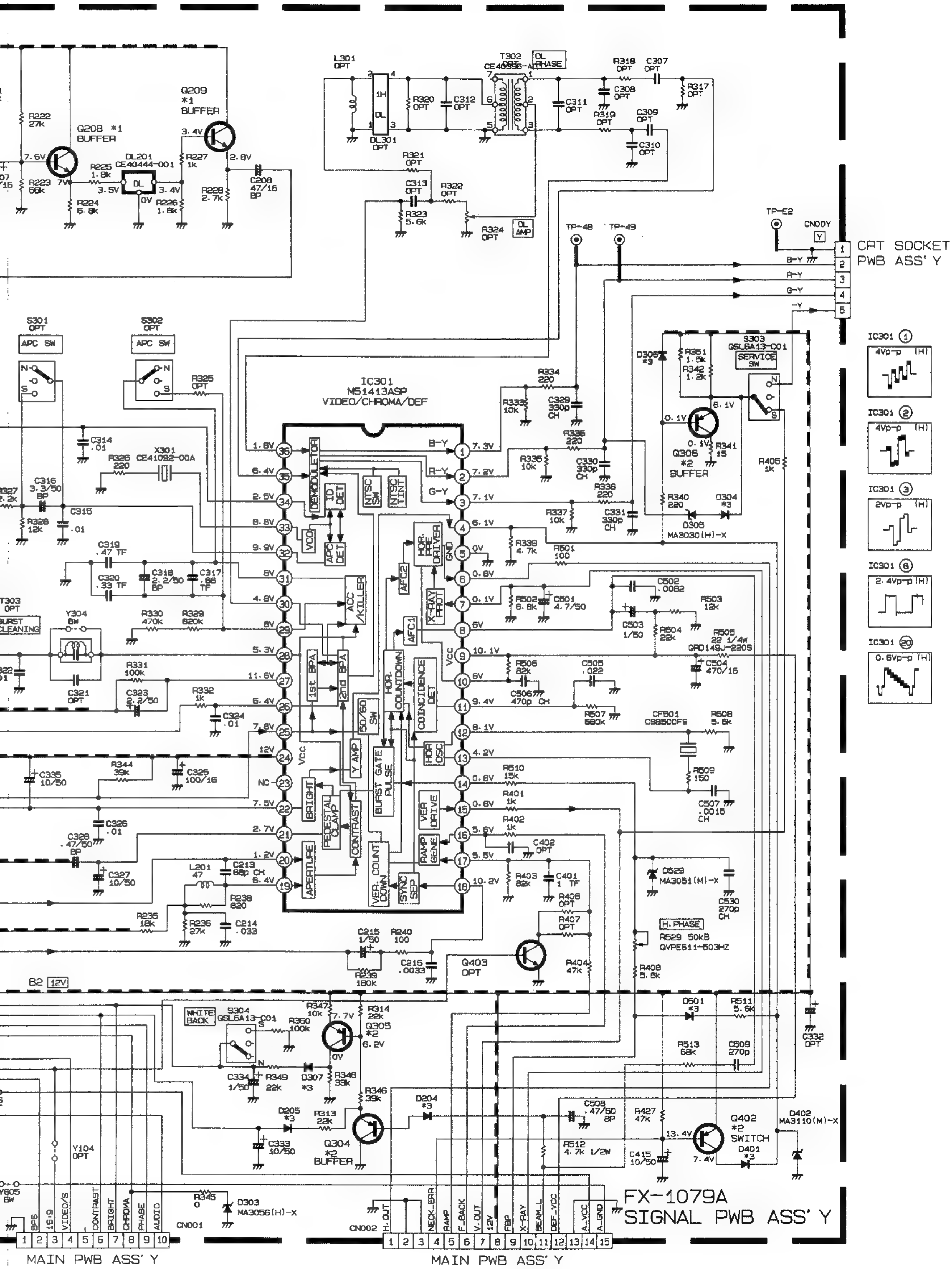
CIRCUIT DIAGRAMS AND PATTERN DIAGRAMS

SIGNAL PWB CIRCUIT DIAGRAM

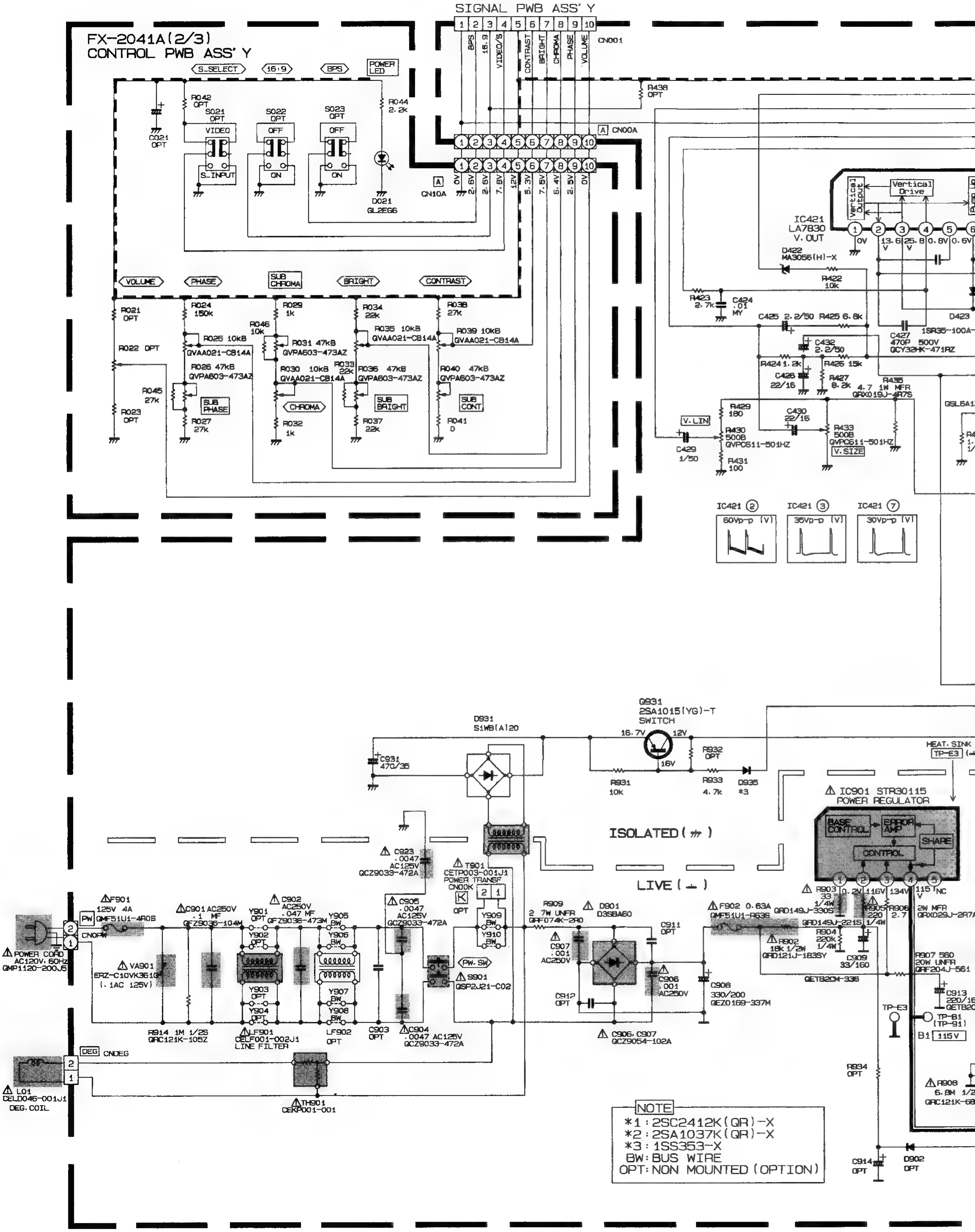


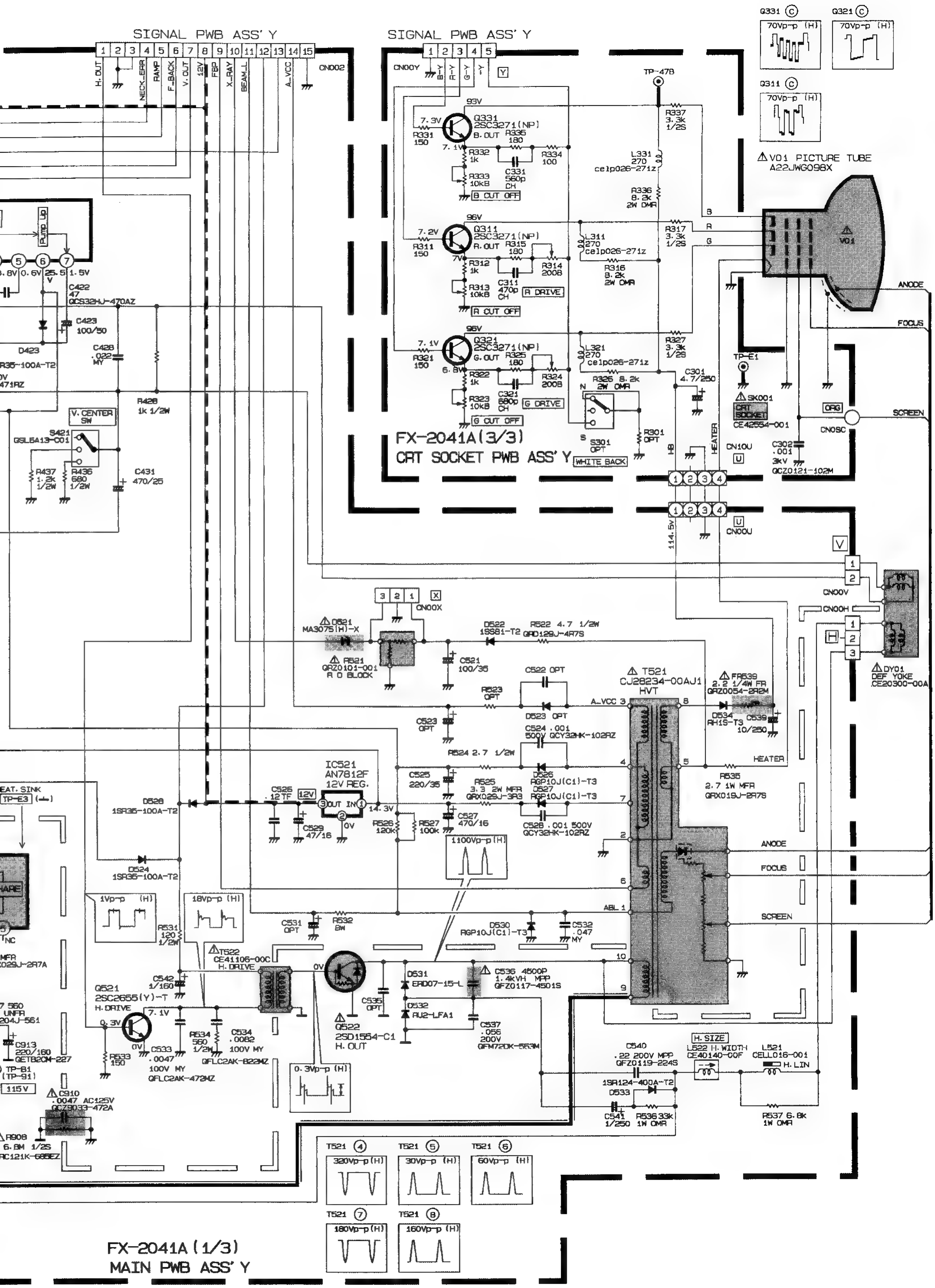
NOTE

*1 : 2SC2412K(QR)-X
*2 : 2SA1037K(QR)-X
*3 : 1SS353-X
BW: BUS WIRE
OPT: NON MOUNTED(OPTION)


IC301
M51413ASP
VIDEO/CHROMA/DEF
CRT SOCKET
PWB ASS' Y
FX-1079A
SIGNAL PWB ASS' Y
MAIN PWB ASS' Y
MAIN PWB ASS' Y
CN001
CN002
B2 12V
Q208 *1 BUFFER
Q209 *1 BUFFER
Q306 *2 BUFFER
Q304 *2 BUFFER
Q305 *2
Q402 *2 SWITCH
Q403 OPT
S301 OPT APC SW
S302 OPT APC SW
S303 QSL6A13-C01 SERVICE SW
S304 QSL6A13-C01 WHITE BACK
H. PHASE
R529 50KB QVPE611-503HZ
DL201 CE40444-001
X301 CE41092-00A
CF501 CSB500F9
T302 OPT
DL PHASE
DL AMP
TP-48
TP-49
TP-E2
CN00Y
IC301 ① 4Vp-p (H)
IC301 ② 4Vp-p (H)
IC301 ③ 2Vp-p (H)
IC301 ⑥ 2.4Vp-p (H)
IC301 ⑳ 0.6Vp-p (H)

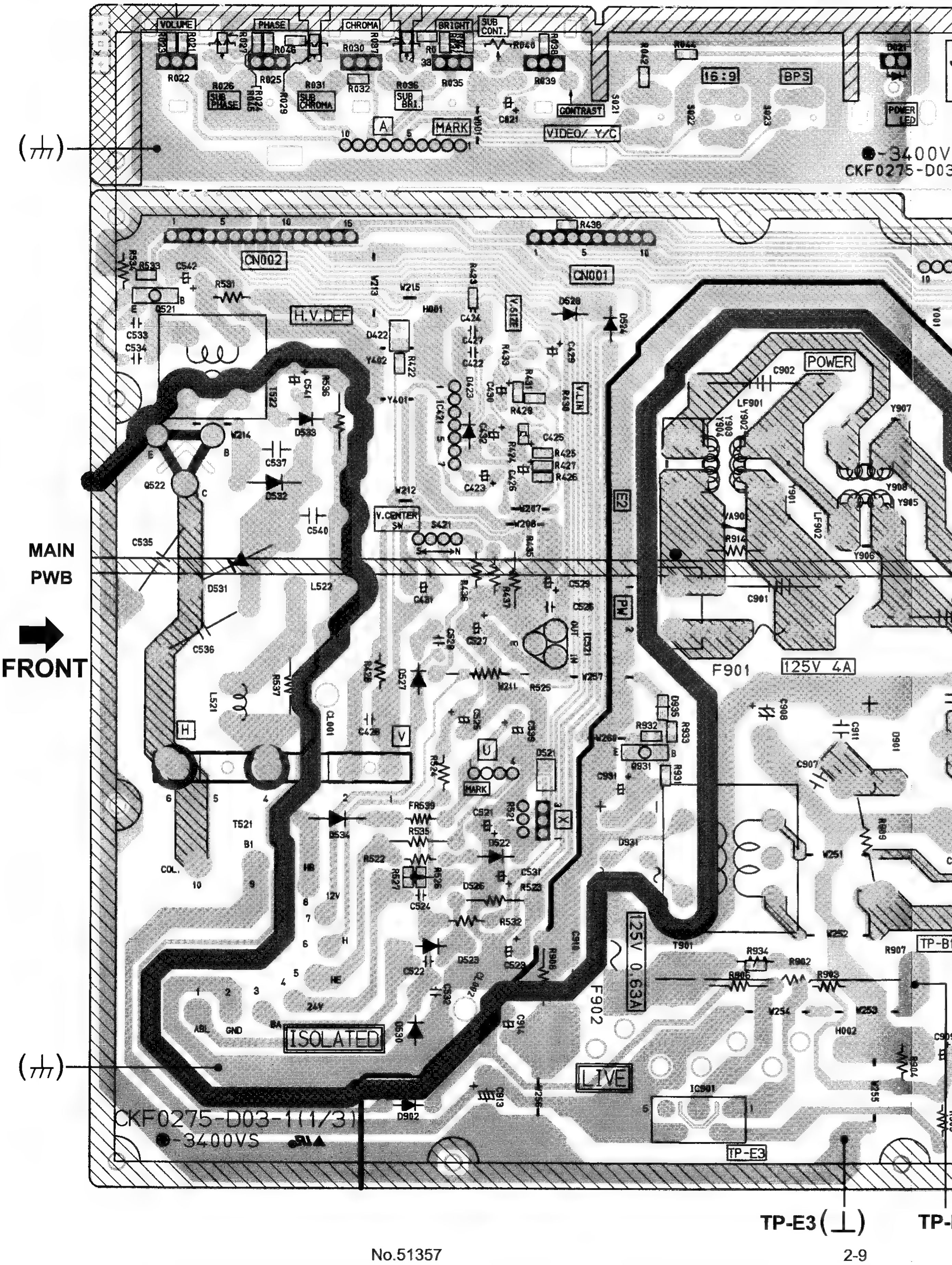
MAIN PWB (1/3), CONTROL PWB (2/3), CRT SOCKET PWB (3/3) CIRCUIT DIAGRAMS

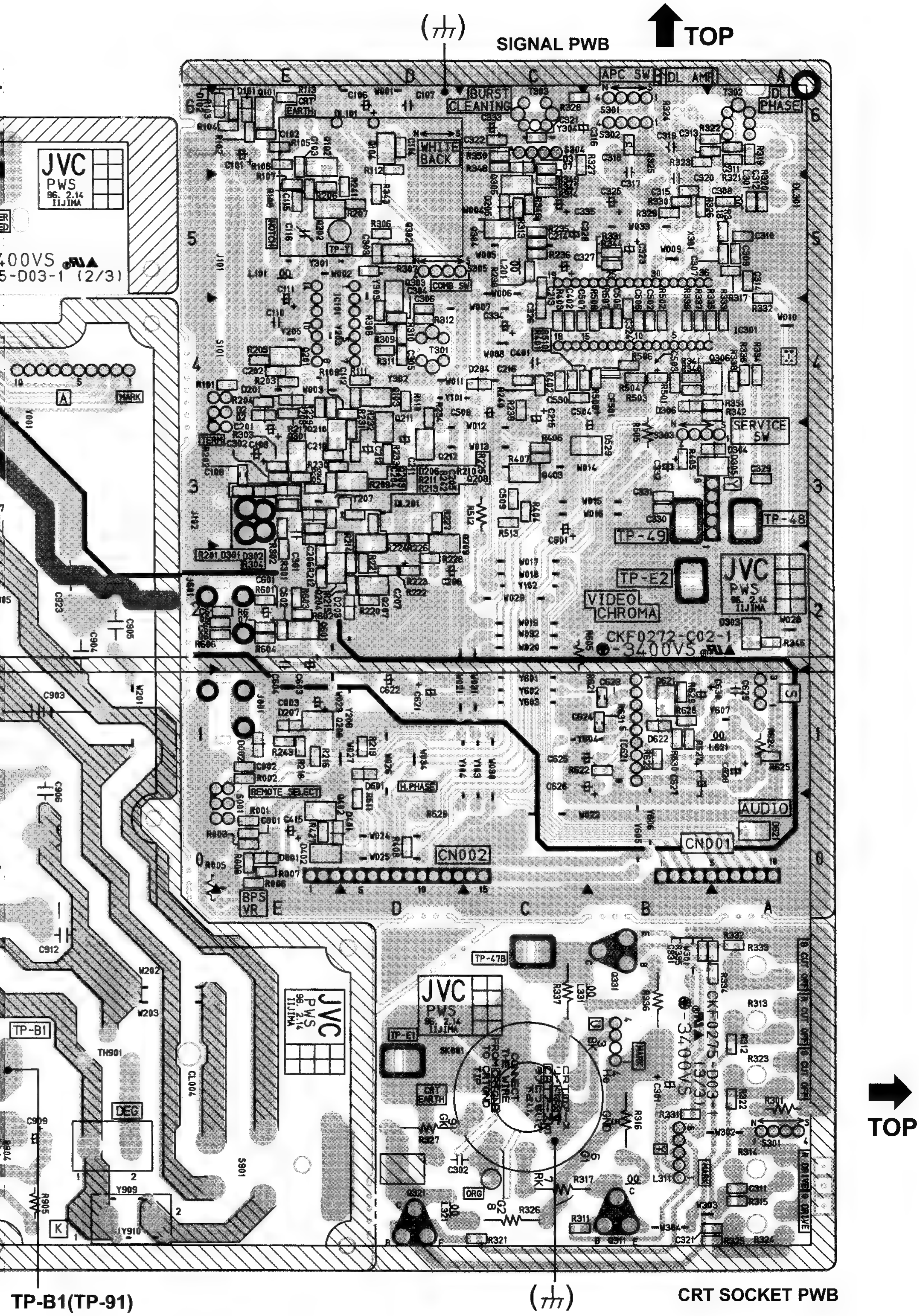



SIGNAL PWB ASS'Y
SIGNAL PWB ASS'Y
Q331
Q321
Q311
VO1 PICTURE TUBE
A22JWG096X
FX-2041A(3/3)
CRT SOCKET PWB ASS'Y
IC521
AN7812F
12V REG.
T521
CJ28234-00AJ1
HVT
DY01
DEF YOKE
CE20300-00A
Q522
2SD1554-C1
H. OUT
Q521
2SC2655(Y)-T
H. DRIVE
FX-2041A(1/3)
MAIN PWB ASS'Y

CIRCUIT DIAGRAMS

MAIN PWB (1/3), CONTROL PWB (2/3), CRT SOCKET PWB (3/3) PATTERNS





VP9712
DP4053

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR

Q R □ □ □ □ □ — ○ ○ ○

Kind (1st □) · Rated Power (2nd–3rd □) · Shape (4th □) · Tolerance (5th □) · Resistance (○ ○ ○)

Symbol	Part Name
C	COMP. R
D	C R
S	CH MG R

Symbol	Rated Power
01	1W
12	1/2W
14	1/4W
16	1/6W
18	1/8W

Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
Please note that, in case of resistance less than 10Ω , a letter "R" will be effective as point.

EX. 2.2Ω → 2 R 2
470Ω = 47×10¹ → 4 7 1
150kΩ = 15×10⁴ → 1 5 4

■ CAPACITOR

Q □ □ □ □ □ □ — ○ ○ ○

Kind (1st–2nd □) · Shape (3rd □) · Rated Voltage (4th–5th □) · Tolerance (6th □) · Capacitance (○ ○ ○)

Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

6Figure \ 5Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that, in case of capacitance less than 10pF a letter "R" will be effective as point.

EX. 5pF → 5 R 0
1000pF =10×10² → 1 0 2
47μF =47×10⁶ → 4 7 6

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

CONTENTS

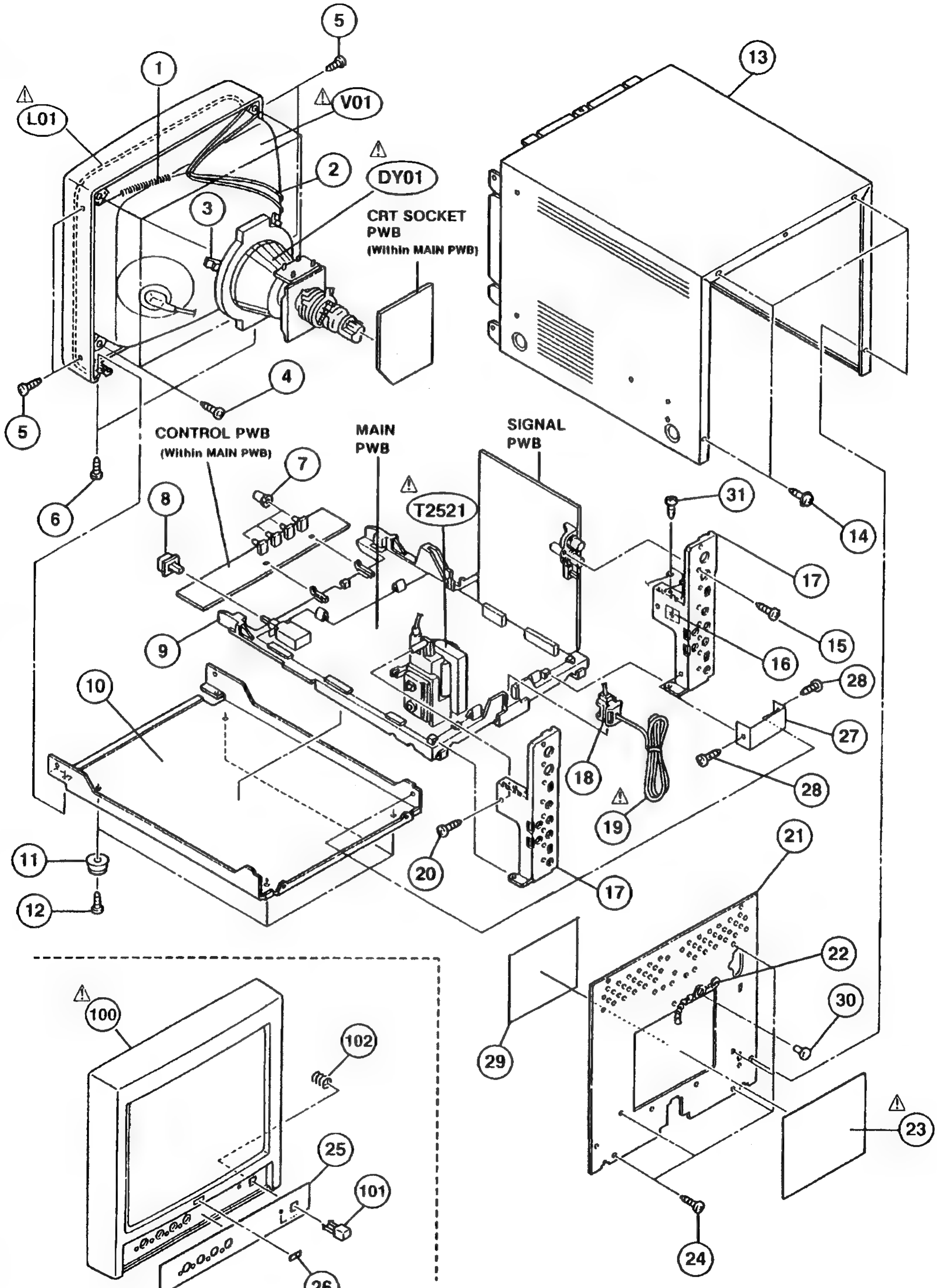
USING P.W. BOARD

P.W.B ASS'Y \ Model	TM-A9UCV
SIGNAL P.W.B	FX-1079A
MAIN (1/3), CONTROL (2/3), CRT SOCKET (3/3) P.W.B	FX-2041A

EXPLODED VIEW PARTS LIST

⚠	Ref. No.	Part No.	Part Name	Description	Local
⚠	L01	CELD046-001J1	DEG. COIL		
⚠	V01	A22JWG098X	PICTURE TUBE		
⚠	DY01	CE20300-00A	DEF YOKE		
⚠	T1521	CJ28234-00AJ1	HVT	(With in MAIN)	
	1	CM48174-001	SPRING		
	2	CHGB0016-0G-N	BRAIDED ASSY		
	3	CE40666-00A	WEDGE ASSY	(×3)	
	4	GBSF4016M	TAPPING SCREW	(×4)	
	5	SDSF3006M	SCREW	(×4)	
	6	GBSB3008Z	TAPPING SCREW	(×2)	
	7	CM46758-004	VOLUME KNOB	(×4)	
	8	CM46115-C01	POWER KNOB		
	9	CM12725-B01-V0	CHASSIS BASE		
	10	CM22942-C01	BOTTOM COVER		
	11	QZF2207-001	FOOT	(×4)	
	12	GBSB3008Z	TAPPING SCREW	(×4)	
	13	CM12726-003	TOP COVER	(SERVICE)	
	14	CM44287-00C	ASSY SCREW	(×4)	
	15	SBSB3010M	TAPPING SCREW		
	16	CM44141-B01	EARTH LABEL		
	17	CM36279-A01	TERMINAL BKT	(×2)	
	18	CM20701-001	CORD BUSHING		
⚠	19	QMP1120-200J5	POWER CORD		
	20	SBSF4012Z	T. SCREW		
	21	CM12727-003	REAR PANEL		
	22	CM48170-001	BEAD TIE		
⚠	23	CM22900-008 (R)	ROLL R LABEL		
	24	CM44287-00C	ASSY SCREW	(×5)	
	25	CM22946-010	CONTROL SHEET		
	26	CM48149-A01	JVC MARK		
	27	CM48192-001	CONNECT BKT		
	28	CM44287-00C	ASSY SCREW	(×2)	
	29	CM36241-004	WARNING LABEL		
	30	CM44117-00A	RIVET		
	31	CM44287-00B	ASSY SCREW	(×2)	
⚠	100	CM12723-C0A-M0	FRONT PANEL ASSY	Inc. No. 101～102	
	101	CM46756-A01	POWER KNOB		
	102	CM46757-001	SPRING		

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

SIGNAL P.W. BOARD ASS'Y (FX-1079A)

⚠	Symbol No.	Part No.	Part Name	Description			Local
	VARIABLE RESISTOR						
	R1529	QVPE611-503HZ	V R(H. PHASE)	50kΩ B			
	RESISTOR						
	R1505	QRD149J-220S	C R	22 Ω	1/4W	J	
	CAPACITOR						
	C1107	QFV71HJ-124MZ	TF CAP.	0.12μF	50V	J	
	C1205	QEN61CM-106Z	BP E CAP.	10μF	16V	M	
	C1206	NCT03CH-121AY	CHIP CAP.	120pF	50V	J	
	C1208	QEN61CM-476Z	BP E CAP.	47μF	16V	M	
	C1211	QEN61CM-106Z	BP E CAP.	10μF	16V	M	
	C1213	NCT03CH-680AY	CHIP CAP.	68pF	50V	J	
	C1214	NCB21HK-333AY	CHIP CAP.	0.033μF	50V	K	
	C1216	NCB21HK-332AY	CHIP CAP.	3300pF	50V	K	
	C1305	NCT03CH-221AY	CHIP CAP.	220pF	50V	J	
	C1306	NCB21HK-103AY	CHIP CAP.	0.01μF	50V	K	
	C1314-15	NCB21HK-103AY	CHIP CAP.	0.01μF	50V	K	
	C1316	QEN61HM-335Z	BP E CAP.	3.3μF	50V	M	
	C1317	QFV71HJ-684MZ	TF CAP.	0.68μF	50V	J	
	C1318	QEN61HM-225Z	BP E CAP.	2.2μF	50V	M	
	C1319	QFV71HJ-474MZ	TF CAP.	0.47μF	50V	J	
	C1320	QFV71HJ-334MZ	TF CAP.	0.33μF	50V	J	
	C1322	NCB21HK-103AY	CHIP CAP.	0.01μF	50V	K	
	C1324	NCB21HK-103AY	CHIP CAP.	0.01μF	50V	K	
	C1326	NCB21HK-103AY	CHIP CAP.	0.01μF	50V	K	
	C1328	QEN61HM-474Z	BP E CAP.	0.47μF	50V	M	
	C1329-31	NCT03CH-331AY	CHIP CAP.	330pF	50V	J	
	C1401	QFV71HJ-105MZ	TF CAP.	1μF	50V	J	
	C1502	NCB21HK-822AY	CHIP CAP.	8200pF	50V	K	
	C1505	NCB21HK-223AY	CHIP CAP.	0.022μF	50V	K	
	C1506	NCT03CH-471AY	CHIP CAP.	470pF	50V	J	
	C1507	NCT03CH-152AY	CHIP CAP.	1500pF	50V	J	
	C1508	QEN61HM-474Z	BP E CAP.	0.47μF	50V	M	
	C1509	NCT03CH-271AY	CHIP CAP.	270pF	50V	J	
	C1530	NCT03CH-271AY	CHIP CAP.	270pF	50V	J	
	TRANSFORMER						
	T1301	CELT034-001	B. PASS TRANSF.				
	COIL						
	L1201	CELP026-470Z	PEAKING COIL	47μH			
	DIODE						
	D1101-02	1SS353-X	SI. DIODE				
	D1204-05	1SS353-X	SI. DIODE				
	D1303	MA3056(H)-X	ZENER DIODE				
	D1304	1SS353-X	SI. DIODE				
	D1305	MA3030(H)-X	ZENER DIODE				
	D1306-07	1SS353-X	SI. DIODE				
	D1401	1SS353-X	SI. DIODE				
	D1402	MA3110(M)-X	ZENER DIODE				
	D1501	1SS353-X	SI. DIODE				
	D1529	MA3051(M)-X	ZENER DIODE				
	TRANSISTOR						
	Q1101	2SC2412K(QR)-X	CHIP TRANSISTOR				
	Q1202-04	2SC2412K(QR)-X	CHIP TRANSISTOR				
	Q1207	2SA1037K(QR)-X	CHIP TRANSISTOR				
	Q1208-11	2SC2412K(QR)-X	CHIP TRANSISTOR				
	Q1212	2SA1037K(QR)-X	CHIP TRANSISTOR				
	Q1302-03	2SC2412K(QR)-X	CHIP TRANSISTOR				
	Q1304-06	2SA1037K(QR)-X	CHIP TRANSISTOR				
	Q1402	2SA1037K(QR)-X	CHIP TRANSISTOR				
	IC						
	IC1301	M51413ASP	I.C. (MONO-ANA)				
	OTHERS						
	CF1501	CSB500F9	CER. RESONATOR				

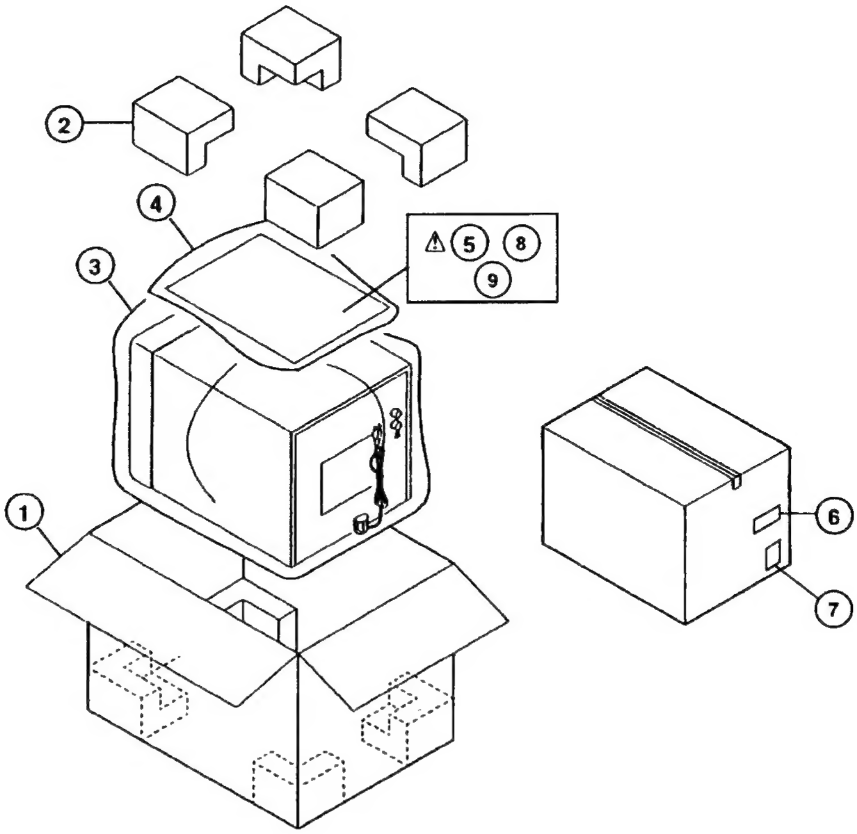
⚠	Symbol No.	Part No.	Part Name	Description	Local
	OTHERS				
	DL1201	CE40444-001	DELAY LINE		
	J1101	CEMB015-002	BNC CONNECTOR		
	S1101	QSS1F22-C07	SLIDE SWITCH	TERM INATION	
	S1303	QSL6A13-C01	LEVER SWITCH	SERVICE SW	
	S1304	QSL6A13-C01	LEVER SWITCH	WHITE BACK	
	S1305	QSL6A13-C01	LEVER SWITCH	COMB SW	
	X1301	CE41092-00A	CRYSTAL		

MAIN (1/3), CONTROL (2/3), CRT SOCKET (3/3) P.W. BOARD ASS'Y (FX-2041A)

⚠	Symbol No.	Part No.	Part Name	Description	Local
	VARIABLE RESISTOR				
	R2025	QVAA021-CB14A	V R(PHASE)	10kΩ B	
	R2026	QVPA603-473AZ	V R(SUB PHASE)	47kΩ B	
	R2030	QVAA021-CB14A	V R(CHROMA)	10kΩ B	
	R2031	QVPA603-473AZ	V R(SUB CHROMA)	47kΩ B	
	R2035	QVAA021-CB14A	V R(BRIGHT)	10kΩ B	
	R2036	QVPA603-473AZ	V R(SUB BRIGHT)	47kΩ B	
	R2039	QVAA021-CB14A	V R(CONTRAST)	10kΩ B	
	R2040	QVPA603-473AZ	V R(SUB CONT)	47kΩ B	
	R2313	QVPE805-103H	V R(R CUT OFF)	10kΩ B	
	R2314	QVPE805-201H	V R(R DRIVE)	200 Ω B	
	R2323	QVPE805-103H	V R(G CUT OFF)	10kΩ B	
	R2324	QVPE805-201H	V R(G DRIVE)	200 Ω B	
	R2333	QVPE805-103H	V R(B CUT OFF)	10kΩ B	
	R2430	QVPC611-501HZ	V R(V.LIN)	500 Ω B	
	R2433	QVPC611-501HZ	V R(V.SIZE)	500 Ω B	
	RESISTOR				
	R2316	QRG029J-822A	OM R	8.2kΩ 2W J	
	R2326	QRG029J-822A	OM R	8.2kΩ 2W J	
	R2336	QRG029J-822A	OM R	8.2kΩ 2W J	
	R2435	QRX019J-4R7S	MF R	4.7 Ω 1W J	
⚠	R2521	QRZ0101-001	R D BLOCK		
	R2522	QRD129J-4R7S	C R	4.7 Ω 1/2W J	
	R2524	QRD121J-2R7SY	C R	2.7 Ω 1/2W J	
	R2525	QRX029J-3R3	MF R	3.3 Ω 2W J	
	R2535	QRX019J-2R7S	MF R	2.7 Ω 1W J	
	R2536	QRG019J-333S	OM R	33kΩ 1W J	
	R2537	QRG019J-682S	OM R	6.8kΩ 1W J	
⚠	R2902	QRD121J-183SY	C R	18kΩ 1/2W J	
⚠	R2903	QRD149J-330S	C R	33 Ω 1/4W J	
⚠	R2905	QRD149J-221S	C R	220 Ω 1/4W J	
	R2906	QRX029J-2R7A	MF R	2.7 Ω 2W J	
	R2907	QRF204J-561	UNF R	560 Ω 20W J	
⚠	R2908	QRC121K-685EZ	COMP.R	6.8MΩ 1/2W K	
	R2909	QRF074K-2R0	UNF R	2.0 Ω 7W K	
	CAPACITOR				
	C2301	QETC2EM-475Z	E CAP.	4.7μF 250V M	
	C2302	QCZ0121-102M	C CAP.	1000pF 3000V A	
	C2311	NCT03CH-471AY	CHIP CAP.	470pF 50V J	
	C2321	NCT03CH-681AY	CHIP CAP.	680pF 50V J	
	C2331	NCT03CH-561AY	CHIP CAP.	560pF 50V J	
	C2424	QFLC1HJ-103MZ	M CAP.	0.01μF 50V J	
	C2428	QFLC1HJ-223MZ	M CAP.	0.022μF 50V J	
	C2521	QETC1VM-107Z	E CAP.	100μF 35V M	
	C2525	QETC1VM-227Z	E CAP.	220μF 35V M	
	C2526	QFV71HJ-124MZ	TF CAP.	0.12μF 50V J	
	C2532	QFLC1HJ-473MZ	M CAP.	0.047μF	
	C2533	QFLC2AK-472MZ	M CAP.	4700pF 100V K	
	C2534	QFLC2AK-822MZ	M CAP.	8200pF 100V K	
⚠	C2536	QFZ0117-4501S	MPP CAP.	4500pF1.4kVH±2.5%	

⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
	C2537	QFM72DK-563M	M CAP.	0.056μF 200V K	
	C2539	QETC2EM-106Z	E CAP.	10μF 250V M	
	C2540	QFZ0119-224S	MPP CAP.	0.22μF 200V ±3%	
	C2541	QETC2EM-105Z	E CAP.	1μF 250V M	
	C2542	QETC2CM-105Z	E CAP.	1μF 160V M	
⚠	C2901	QFZ9036-104M	MF CAP.	0.1μFAC250V M	
⚠	C2902	QFZ9036-473M	MF CAP.	0.047μFAC250V M	
⚠	C2904	QCZ9033-472A	C CAP.	4700pFAC125V M	
⚠	C2905	QCZ9033-472A	C CAP.	4700pFAC125V M	
⚠	C2906	QCZ9054-102A	C CAP.	1000pFAC250V Z	
⚠	C2907	QCZ9054-102A	C CAP.	1000pFAC250V Z	
	C2908	QEZ0169-337M	E CAP.	330μF 200V M	
	C2909	QETB2CM-336	E CAP.	33μF 160V M	
⚠	C2910	QCZ9033-472A	C CAP.	4700pFAC125V M	
	C2913	QETB2CM-227	E CAP.	220μF 160V M	
⚠	C2923	QCZ9033-472A	C CAP.	4700pFAC125V M	
	TRANSFORMER				
⚠	T2521	CJ28234-00AJ1	HV TRANSF.		
⚠	T2522	CE41106-00C	DRIVE TRANSF.		
⚠	T2901	CETP003-001J1	POWER TRANSF.		
	COIL				
	L2311	CELP026-271Z	PEAKING COIL	270μH	
	L2321	CELP026-271Z	PEAKING COIL	270μH	
	L2331	CELP026-271Z	PEAKING COIL	270μH	
	L2521	CELL016-001	LINIARITY COIL		
	L2522	CE40140-00F	WIDTH COIL		
	DIODE				
	D2021	GL2EG6	L.E.D.(GRN)	POWER LED	
	D2422	MA3056(H)-X	ZENER DIODE		
	D2423	1SR35-100A-T2	SI.DIODE		
⚠	D2521	MA3075(H)-X	ZENER DIODE		
	D2522	1SS81-T2	SI.DIODE		
	D2524	1SR35-100A-T2	SI.DIODE		
	D2526-27	RGP10J(C1)-T3	SI.DIODE		
	D2528	1SR35-100A-T2	SI.DIODE		
	D2530	RGP10J(C1)-T3	SI.DIODE		
	D2531	ERD07-15-L	SI.DIODE		
	D2532	RU2-LFA1	SI.DIODE		
	D2533	1SR124-400A-T2	SI.DIODE		
	D2534	RH1S-T3	SI.DIODE		
⚠	D2901	D3SBA60	DIODE BRIDGE		
	D2931	S1WB(A)20	SI.DIODE		
	D2935	1SS353-X	SI.DIODE		
	TRANSISTOR				
	Q2311	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2321	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2331	2SC3271(NP)-C1	SI.TRANSISTOR		
	Q2521	2SC2655(Y)-T	SI.TRANSISTOR		
⚠	Q2522	2SD1554-C1	SI.TRANSISTOR	H.OUT	
	Q2931	2SA1015(YG)-T	SI.TRANSISTOR		
	IC				
	IC2421	LA7830	I.C.(MONO-ANA)		
	IC2521	AN7812F	I.C.(MONO-ANA)		
⚠	IC2901	STR30115	I.C.(H)		
	OTHERS				
		CM46978-A01-H	L.E.D.HOLDER		
⚠	F2901	QMF51U1-4R0S	FUSE	4.0A	
⚠	F2902	QMF51U1-R63S	FUSE	0.63A	
⚠	FR2539	QRZ0054-2R2M	F R	2.2Ω 1/4W J	
⚠	LF2901	CELF001-002J1	LINE FILTER		
	S2421	QSL6A13-C01	LEVER SWITCH	V.CENTER SW	
⚠	S2901	QSP2J21-C02	PUSH SWITCH	POWER SWITCH	
⚠	SK2001	CE42554-001	CRT SOCKET		
⚠	TH2901	CEKP001-001	P.THERMISTOR		
⚠	VA2901	ERZ-C10VK361G	VARISTOR		

PACKING



PACKING PARTS LIST

⚠ Ref.No.	Part No.	Part Name	Description	Local
1	CP11224-065	PACKING CASE		
2	CP11460-B0A	CUSHION ASSY	8pcs in 1set	
3	CP30974-003	POLY BAG		
4	CP30975-001	POLY BAG		
⚠ 5	LCT0149-001A	INST BOOK		
6	CM47385-00A	POS/SERIAL LABEL		
7	CM21428-00A	REC.KEEP CARD		
8	BT-51010-1	WARRANTY CARD		
9	BT-20104A	SERVICE CARD		

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